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From Benefits to Success:

Post-9/11 Student Veterans' Educational Outcomes at a Texas Community College

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From Benefits to Success:

Post-9/11 Student Veterans' Educational Outcomes at a Texas Community College

by

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Dissertation

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

May 2017

Dedication

This dissertation is dedicated in loving memory of my grandfather, Neveille H. Williams, Jr. In 1941, with parental approval, he enlisted into the U.S. military—he was 17 years old. A navigator in World War II, he sustained injuries in combat, which led to a medical discharge and earned him a Purple Heart. In 1946, he used his GI Bill benefits to enroll at The University of Texas at Austin. Like many veterans at the time, he brought his family and lived in veteran housing on campus. He worked two jobs while attending school and graduated Cum Laude in 1949 with a Public Accounting degree. His military and educational experience was a near-historical blueprint of so many student veterans at the time. Though not untouched by the effects of war, he was truly the patriarch of our family. This one is for you Granddaddy.

Acknowledgements

I sincerely appreciate the time, support, and expertise given to me by my committee members. Dr. Somers and Dr. Sharpe, thank you both for generously agreeing to chair and co-chair my committee. Your input and guidance throughout the process were instrumental in sustaining in me the belief that I could finish this sometimes-daunting task. Dr. Gooden, thank you for your critical perspective, for challenging me to raise the bar, and for teaching me to always look at what the data are telling me and what they are not. Dr. Larkins, without a doubt, my professional work with you and others at the Community College of the Air Force inspired me to take the leap into the community college sphere of higher education. I am forever thankful for your advice and motivation throughout this process.

To my fellow cohort members, I cannot imagine a better group of individuals with whom to be on this journey. You are among the most academically dedicated, critical thinkers I have met, and I look forward to seeing your impact on higher education research and practice. A special thanks to Mike and Dorado—your friendship, encouragement, and humor made these three-plus years enjoyable and kept me accountable to getting it done.

To my parents, thank you for being examples of perseverance and for setting an expectation of excellence early on in my life. Mom, thank you for reviewing and offering feedback on so many papers. Finally…Team Morrill, we did it! To my husband, Lance, thank you for always being my cheerleader, for your never-ending

patience, and for your steadfast belief in me. To my children, Lily and Nate, who never complained during this journey, who sat as an audience while I practiced many presentations, and who, towards the end, kept asking, “How’s your paper going?”, thank you for the sacrifices you made, so I could pursue this goal. I love you guys!

From Benefits to Success:

Post-9/11 Student Veterans' Educational Outcomes at a Texas Community College

by

Sammi Marie Morrill, Ph.D.

The University of Texas at Austin, 2017

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The Post-9/11 GI Bill represents unprecedented federal funding intended to aid veterans in furthering their education and successfully making the transition to the civilian workforce. While widely reported that the student veteran population experiences unique challenges on college campuses that may hinder their degree completion, there is little empirical research on their educational outcomes. Research is especially scarce at the community college level.

The purpose of this study was to investigate the variables that influence completion and transfer rates among Post-9/11 student veterans enrolled at a Texas community college. The Bean and Metzner (1985) model of nontraditional student attrition served as the conceptual framework for the study and was adapted to reflect the background and defining variables, academic outcome, and environmental variables

relevant to the study's focus on student veterans and the mission of community colleges. Institutional and National Student Clearinghouse data were used in this study.

First, descriptive analysis offered a baseline portrait of student veterans who were successful at completing a certificate/degree or transferring and those who were not. Second, independent measures *t*-tests and chi-square tests of independence revealed age, at time of enrollment, and first-term cumulative GPA were significantly associated to student veterans who earned a certificate or an associate degree, or transferred to a four-year institution. Next, a logistic regression analysis investigated the predictive nature of these variables to a student veteran's successful completion or transfer. The overall model was found to be statistically significant, ($\chi^2 = 12.117$, $p = .002$, $df = 2$) and correctly predicted 86.5% of the population's outcome. Finally, the influence of first-term cumulative GPA prompted a linear regression analysis of its relationship, as a dependent variable, with the remaining independent variables. The results suggested a statistically significant negative relationship between minority racial status and GPA, a statistically significant positive influence for full-time enrollment status, and a statistically significant positive effect for older student veterans on GPA. Recommendations for policy, practice, and future research are addressed in this study.

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Chapter 1: Introduction

Gulf War-era II veterans include those members who served in the Armed Forces after September 10, 2001. They are commonly referred to as Post-9/11 veterans, a moniker in reference to the four devastating terrorist attacks carried out on the United States (U.S.) on September 11, 2001. In 2015, Post-9/11 veterans in the U.S. numbered over 3 million and are expected to increase to approximately 3.5 million by 2019 (National Center for Veterans Analysis and Statistics [NCVAS], 2015) and to roughly 5 million by 2020 (U.S. Government Accountability Office [GAO], 2013b). For many of these veterans, their successful transition from the military to the civilian workforce will be pursuant upon the attainment of higher education or training. Their access to postsecondary education is fostered by the financial assistance available to them through the most generous GI Bill since the Servicemen's Readjustment Act of 1944 (GAO, 2013b).

Ratified in June 2008, the Post-9/11 Veterans Educational Assistance Program (Post-9/11 GI Bill®) includes a comprehensive benefits structure that is tiered upon creditable time served, type of educational or training program, school location, and level of enrollment. Maximum benefit rates for academic year 2016 include: full payment of in-state tuition and fees at public institutions, a $1,000 stipend for books and supplies, a monthly housing allowance, and a one-time rural relocation benefit. Tuition for attendance at private or foreign institutions is capped at $21,970.46 for the academic year. Additional financial support may be available through the Yellow Ribbon Program for costs above the allowable tuition rates. The entitlement period for these benefits is

equal to 36 months of full-time attendance. Tuition and fees are paid directly to the institution, while the book/supply stipend and housing allowance is paid to the veteran (U.S. Department of Veterans Affairs [VA], 2016).

From 2009 to 2013, approximately four million education claims, totaling some $30 billion had been issued under the Post-9/11 GI Bill (GAO, 2013b). An estimated $11 billion more was provided in fiscal year 2014 for 790,000 beneficiaries (GAO, 2015). With such a large number of veterans pursuing education and the substantial federal investment, policymakers have emphasized the need for more institutional transparency and accountability in terms of student outcomes, particularly graduation rates (Executive Order No. 13607, 2012; GAO, 2013a; National Association of Student Personnel Administrators [NASPA], 2013).

In April 2012, President Obama signed Executive Order No. 13607: Establishing Principles of Excellence, requiring institutions receiving payment through the U.S. Department of Veteran Affairs (VA) to adopt consumer disclosure practices, along with additional military-friendly practices, such as streamlined readmission practices for members who may have stopped out due to service obligations and designating "a point of contact for academic and financial advising, including disability counseling" (Sec. 3(h), 2012). In addition, Executive Order No. 13607 mandated the Department of Defense, the Office of Veterans Affairs, and the Department of Education collaborate to develop a strategy for collecting and reporting student outcome data that could be incorporated into a comprehensive information technology tool. The tool was intended to aid military members and veterans in making informed decisions on which institutions to

enroll in based upon comparisons of affordability and quality (Executive Order No. 13607, 2012). While the order was prompted by Congressional hearings on predatory practices by some for-profit institutions, it heightened the call for accountability for all higher education institutions.

Following Executive Order No. 13607, the Improving Transparency of Education Opportunities for Veterans Act of 2012, Public Law 112-249 further instructed the Secretary of Veteran Affairs to develop an information hub that shared accreditation information and available federal aid programs at higher education institutions. It also required the VA to survey commercial, off-the-shelf online tools that would aid veterans in determining their academic readiness for pursuing training and education opportunities.

As the result of these mandates, the GI Bill® Comparison Tool was developed. While the current version is more robust than the initial reporting tool and displays outcome measures—retention and persistence rates, transfer-out rates, and graduation and program completion rates, it still relies on institutions to voluntarily report outcome data for Post-9/11 GI Bill recipients (Hickey, 2015). In addition, student data are aggregated to "GI Bill Students," which represents all beneficiaries (e.g., service members, veterans, and eligible dependents). However, the tool does summarize important institutional information, when available, to be considered by prospective military students and student veterans.

The most recent legislative action pertaining to student veterans in higher education came with the passage of the Jeff Miller and Richard Blumenthal Veterans

Health Care and Benefits Improvement Act of 2016, Public Law 114-315. Title IV of the law specifically addresses educational assistance and vocational rehabilitation of veterans. Section 404 mandates educational institutions receiving Post-9/11 GI Bill funds report annually on the academic progress of every beneficiary (§ 3326). Section 411 requires an annual compliance survey, conducted by the VA, of any educational institution or training establishment with 20 or more benefit-receiving student veterans. Each institution must be surveyed every two years; the VA is required to inform State-approving agencies by 1 September of the schools to be surveyed in the upcoming fiscal year.

While the Post-9/11 GI Bill has spurred a federal interest to better understand the return on the investment in educational benefits, empirical research related to student veterans' educational outcomes remains limited in scope. This chapter further describes the problem that has led to the need for this study and defines the study's purpose. The study's research questions and design are discussed, and the significance of the study is explained. The chapter defines terms used throughout the study and describes the delimitations and assumptions of the study. The final section outlines the organizational structure of this paper.

Statement of the Problem

The Post-9/11 GI Bill represents unprecedented federal funding intended to aid military service members and veterans in furthering their education and training and successfully making the transition to the civilian workforce. While it has been widely reported that this population experiences unique challenges on college campuses that may

hinder their completion of a degree, there has been little empirical research on their educational outcomes (GAO, 2013a).

Researchers have noted the scarcity of peer-reviewed scholarly literature on Post-9/11 student veterans and have called for an expansion to the body of knowledge (Barry, Whiteman, & Wadsworth, 2014; Ford & Vignare, 2015). As such, much of the literature on student veterans relies on doctoral dissertations and national descriptive analysis reports. Doctoral dissertations published over the last few years address topics such as college choice (Molina, 2015b), military-to-college transition (Falkey, 2014; Rumann, 2010), and educational attainment (Buck, 2014; O'Rourke, 2013; Sibson, 2014). In addition, a wealth of descriptive data has been published through higher education associations (e.g., American Council on Education; NASPA; National Survey of Student Engagement [NSSE]), government agencies (e.g., VA; GAO), and non-profit organizations (e.g., Student Veterans of America; Pat Tillman Foundation); however, these lack inferential statistics studied through a theoretical lens.

This study is distinct from prior research of Post-9/11 student veterans in that the scope is narrow in specification of institutional type and student population. With more than 38% of student veterans choosing to enroll at public two-year institutions (more than any other type of higher education institution) (Molina & Morse, 2015), there is a clear need for more research at the community college level. The terminology used to describe the student population in the current literature can be confusing in that some reports aggregate military service students (e.g., active duty, National Guard, and reserves personnel) with student veterans. Military service students and student veterans approach

higher education differently (Molina & Morse, 2015; Servicemembers Opportunity College [SOC], 2012); therefore, this study precisely defines the population as student veterans.

Purpose of the Study

This study sought to investigate the variables that may influence completion and transfer rates among Post-9/11 student veterans enrolled at a Texas community college. The study addressed key demographic, academic, and environmental variables. The extent to which these variables differ among student veterans who complete an associate degree or certificate or transfer to a four-year institution and those who do not were examined. Further analysis investigated the predictive nature of these variables in the successful completion of a degree or transfer.

Research Questions

The research questions for this study were:

RQ1: Is there a significant difference in background/defining factors between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not?

RQ2: Is there a significant difference in the academic factor between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not?

RQ3: Is there a significant difference in environmental factors between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not?

RQ4: What factors best predict student veterans, enrolled at a Texas community college, success in completing a degree/certificate or transferring to a four-year institution?

Research Design

This study sought to understand the relationship among the demographic, academic, and environmental factors associated with student veteran completion of an associate degree, a certificate, or transfer to a four-year institution. The design was non-experimental and used extant data to examine factors that may differentiate between student veterans who were successful and those who were not. In addition, a correlational research design was used to analyze those factors that may predict associate degree or certificate completion, or transfer among student veterans.

Significance of the Study

The significance of the study is threefold. First, results for the study expand the research literature on student veteran's educational outcome data, filling a near void for such analysis at the community college level. Second, the study's findings could help inform policymakers about the relationship of the investment in veterans' educational benefits to student veterans' successful completion of an associate degree or certificate, or transfer to four-year institutions. Third, the study strengthens the framework institutions use to report and analyze student veterans' postsecondary outcomes. Such institutional effectiveness data can assist in identifying potential barriers to successful educational progress and completion by student veterans and can aid in developing subsequent intervention strategies.

Definition of Terms

To ensure a common reference for terms used throughout this study, the following definitions are provided:

Educational attainment: completion of a postsecondary certification or degree.

Educational benefit: any financial benefit, administered under the Department of Veteran Affairs, to assist eligible military service members, veterans, or their spouse or children in pursuing education or training opportunities.

GI Bill: first coined during the passage of the Servicemen's Readjustment Act of 1944; refers to any of the readjustment acts that provide educational benefits.

Nontraditional student: a student with one or more of the following characteristics: delayed enrollment, part-time enrollment, financial independence, full-time employment while enrolled, has dependents, single parent, or no standard high school diploma (U.S. Department of Education, National Center for Education Statistics [NCES], n.d.).

Persistence: progress toward the completion of a certification or degree; generally measured by the rate of returning students from one term to the next or Fall to Fall terms.

Post-9/11: continuing timeframe in the United States that began with the terrorist attacks on September 11, 2001.

Post-9/11 Veteran: servicemember or veteran who has served or served on active duty since September 2001.

Servicemember: a member of the Armed Forces, to include active duty, National Guard, and reserve members of the Air Force, Army, Navy, Coast Guard, Marine Corps.

Student veteran: a veteran who is "registered for at least one course credit at a VA-approved postsecondary *institution"* (Cate, 2014, p. 23).

Veteran: a person discharged under other-than-dishonorable conditions or released from active military service, to include reserve and National Guard members, who were called to active duty and completed full service obligation (Szymendera, 2015).

Delimitations

Five delimitations set the scope of the study. First, only student veterans, as defined in the previous section, were included in the analysis. This decision was informed by Molina and Morse's (2015) finding of key differences in factors related to postsecondary enrollment and educational outcomes among student veterans and other "military-connected undergraduates" (e.g., active duty, National Guard, and reserve personnel). Second, student veterans using their Post-9/11 GI Bill benefits were the focus of the study, thus those veterans using other VA educational benefits or the Hazlewood benefits available in Texas were not included in the analysis. Third, the study only examined associate degree completion, certificate attainment, and transfer out to a four-year institution. While partial persistence data was captured, it was not the intention of the study to analyze student persistence as an outcome variable. Fourth, the setting of the study was one Texas community college. Finally, this study did not include service-related disabilities or injuries or psychological or mental health issues as variables for analysis.

Assumptions

The study had the following assumptions:

1. The institutional student data were accurate.
2. Institutional records identify student veterans separately from military service students and dependents.
3. The financial aid and Department of Veterans Affairs' educational benefit information were accurate.
4. There are differences among the student veterans who complete an associate degree or certificate, or transfer to a four-year institution and those who do not.
5. The variables chosen for analysis were the best suited to understand their relationship with a student veteran's educational outcome at a community college.

Organization of the Study

This dissertation study consists of five chapters and a reference section. This chapter included an overview of the Post-9/11 GI Bill and the growing federal interest in reporting outcome data for student veterans. The overview led to the statement of the problem and the purpose of the proposed study, followed by the research questions and explanation of the research design. Finally, this chapter described the significance of the study, defined terms used throughout the study, and discussed the delimitations and assumptions of the study.

Chapter 2 reviews the literature of student veterans in higher education. It opens with an abbreviated history of veterans' educational benefits and the GI Bill's impact on higher education and then discusses the more recent studies of student veterans. Chapter 2 concludes with an explanation of the study's conceptual framework. Chapter 3 cites the methodology that was employed to address the purpose of this study and the research

questions. It further describes the research design, the data source, the factors and variables, the data analysis techniques, and the research assumptions. Chapter 4 outlines the results of the analyses. It begins with overall descriptive statistics of the population and then addresses the results of each research question. The chapter includes additional exploratory analysis results. Chapter 5 summarizes the study and discusses the results in light of the related research literature. Recommendations for practice and future research close the chapter.

Chapter 2: Literature Review

This literature review offers a framework of understanding and a rationale for this dissertation study on student veterans' completion and transfer out rates at a Texas community college. The first section provides a description of the origin and evolution of military educational benefits, tracing the GI Bill from its founding to today's Post-9/11 GI Bill. Next is a discussion on the historical relationship between the GI Bill and higher education. A portrayal of student veterans and their path to educational attainment follows. The subsequent section briefly outlines student persistence models, ending with a model for nontraditional students. Finally, the chosen conceptual framework for the study culminates this literature review. The origin of providing veterans educational benefits stems from the principle of compensation for service; however, economic and political pressures, as well as public sentiment have influenced the level of such support.

The Origin and Evolution of Veterans' Educational Benefits

Although American military veterans and their dependents have historically received benefits for their wartime service, the breadth and depth of the funding has greatly varied (Olson, 1975). In the early seventeenth-century, colonial legislative measures were in place to offer aid to citizen-soldiers who were wounded in conflicts with Native Americans. During the Revolutionary War, Virginia promised lifetime assistance for disabled soldiers and half-pay to the children and spouses of those slain in battle, and a provision for a type of pension was passed in the Commonwealth of Pennsylvania. Concerned these promises would not come to fruition, officers of the Continental Army founded the Society of Cincinnati. This body was instrumental in

assuring passage of wartime compensation legislation (Johnson, 2009), foreshadowing the role veterans' organizations would play in securing benefits for military members.

Prompted by the inequitable benefits between veterans of the War of 1812 and the Mexican War, the Brethren of the War of 1812 successfully petitioned Congress for what became "the largest, and last land grant for veterans" and their beneficiaries—34 million acres (Johnson, 2009, p. 207). The Grand Army of the Republic, established in 1866, marshaled large numbers of members and became astute at lobbying Congress for impressive veteran pension plans (Johnson, 2009). These types of benefits; however, would not be adequate to address the economic circumstances that followed World War I.

Returning home from World War I, four million service members "received $60 in separation pay and a railroad ticket home" (Johnson, 2009, p. 209). For disabled veterans, the Rehabilitation Act of 1919 guaranteed subsidies for rehabilitative or vocational training. In addition, reading and writing programs were established to address the low educational level and high illiteracy rate of many veterans. Some states began offering free tuition to veterans for use at public colleges and universities (Johnson, 2009). However, the U.S. lacked a strong national reintegration strategy for returning veterans. In response, officers from this war established the American Legion in 1919 to represent and advocate on behalf of veterans (Frydl, 2009).

In 1924, Congress introduced the Adjusted Compensation Act that articulated a delayed bonus structure for World War I veterans. The bonus amount varied depending on the number of days served and whether or not the member had been stationed overseas. Total compensation was to be paid in 1945 (Johnson, 2009). President Calvin

Coolidge vetoed the measure due to its estimated cost and contended, "it violated the principle of equity, that is, it singled out one class of citizens, the veterans, for preferential treatment" (Johnson, 2009, p. 210). Soon after, the devastating economic impact of the Great Depression would increase tension over the proposed bonus for veterans.

Like many other Americans in the early 1930s, veterans found themselves facing severe hardships, thus, they began demanding their bonuses. Twenty thousand veterans, determined to compel Congress to pass the bonus bill, organized into the Bonus Expeditionary Force and marched on Washington during the spring of 1932 (Johnson, 2009). President Herbert Hoover, as well as leaders in the House and Senate, contested the bill, due in part to the fact veteran benefits already accounted for a quarter of the federal budget (Frydl, 2009).

The House was successful in passing the bill, yet the celebration was short lived, when the Senate, by large margin, rejected it. In response, the Bonus Expeditionary Force demonstrated again in late July 1932. This time, the administration took actions to remove the group from government property. The situation unraveled, resulting in the death of two demonstrators and President Hoover ordering in the Army. Protestors were forced out of Washington, but at a cost to the administration's public image (Johnson, 2009).

The first acts of the next president, President Franklin D. Roosevelt, did little to demonstrate support for veteran benefits. Sixteen days after his inauguration, President Roosevelt, through the Economy Act, reduced veterans' benefits by half. He justified his

actions during the 1933 American Legion convention, stating, “that no person, because he wore a uniform, must therefore be placed in a special class of beneficiaries” (quoted in Olson, 1975, p. 19). His firm stance changed with the U.S’s entry into World War II and the expansion of the Selective Service Act.

In 1943, after both the National Resources Planning Board (NRPB) and the Armed Forces Committee on Post-War Educational Opportunities for Service Personnel submitted reports designed to provide economic safeguards during the demobilization of service members, President Roosevelt requested legislative action by Congress (Olson, 1973). The NRPB estimated between eight and nine million veterans would be unemployed. Both reports recommended educational benefits as a means to stabilize the economy; the individual’s benefit was considered incidental (Olson, 1975). The economic hardships that followed World War I were fresh in the memory of the public, and many policymakers feared potential rebellion or unrest among unemployed veterans (Olson, 1973). Although there was political support for the benefits, the drafting of the legislation was fragmented. Recognizing the need for a comprehensive bill, the American Legion prepared an omnibus that shaped much of the final language of the bill. It was their political and organizational power that assured the passage of the Servicemen’s Readjustment Act of 1944, coined by the legion as the “GI Bill” (Johnson, 2009).

The Servicemen’s Readjustment Act of 1944

Signed by President Roosevelt on June 22, 1944, the GI Bill centralized management of the authorized programs under the Veteran Administration (Olson, 1975).

In addition to education and training benefits, key components of the bill included funding for unemployment compensation, home and business loans, and hospital construction. Veterans were eligible to receive unemployment benefits of $20 per week for a maximum of 52 weeks, and self-employed veterans could receive a portion of unemployment aid, if needed, while reestablishing their businesses. Veterans needing home or business loans could receive 50% of the loan guaranteed through the Veteran Administration office for up to $2,000, at a maximum interest rate of 4%. Education and training benefits included $500 a year for up to three years and monthly allowances of $50 or $75 per month, depending on the veteran's marital status (Johnson, 2009). By its closure in July 1956, 7.8 million World War II veterans had used the GI Bill to enroll in education or training programs (U.S. Department of Veterans Affairs [VA], n.d.). At a cost of nearly $6 billion dollars in benefits, more than two million of them attended college (Olson, 1973). Six years prior to the GI Bill's closure, legislation was already being crafted to extend benefits for military members serving in the Korean War (Johnson, 2009).

The Veterans' Readjustment Assistance Act of 1952: Korean GI Bill

Similar to the original GI Bill, the Korean GI Bill (1952) included not only educational benefits, but also unemployment and job placement assistance and loan guarantees (Johnson, 2009). However, overall, the educational benefits were less generous. Korean War veterans who had served for more than 180 days on active duty between January 31, 1955 and January 1, 1977 were eligible for the Korean GI Bill for up to 10 years following discharge. The type of education or training and the veteran's

number of dependents determined the amount of monthly aid received (Angrist, 1993). By the time the bill expired in January 1965, more than 2 million veterans had used their educational benefits. Just over half attended a university or college, while approximately 1.18 million attended vocational or agricultural training. The following year, Congress authorized the 1966 GI Bill (Johnson, 2009).

The Veterans' Readjustment Benefits Act of 1966: Vietnam Era GI Bill

The Vietnam Era GI Bill (1966) expanded educational benefits to active duty service members and allowed retroactive eligibility to some Korean War veterans. Stipends were again paid directly to the service member or veteran and began at $100 per month. By 1984, the legislation was amended to increase the monthly aid to $376 for books, fees, and tuition. Although the bill expired in 1976, eligibility for enrollment remained open until December 1989. An estimated five million service members and veterans enrolled in higher education through the use of more than $42 billion in benefits (Johnson, 2009).

The Veterans' Education and Employment Assistance Act of 1976

The Veterans Education and Employment Assistance Act (1976) replaced the Vietnam Era GI Bill in 1976 with several important restrictions. The decision to enroll in the program had to be made upon enlistment, and members were required to contribute $100 per month; such an amount represented a large portion of their already low monthly pay (Cohen, Warner, & Segal, 1995). The government matched the contributions two-to-one. With the maximum contribution by the member limited to $2,700, the total stipend was capped at $5,400 (Angrist, 1993). This was a considerable decrease in benefits

compared to the prior GI Bill's total stipend of $16,500 and as such, negatively influenced recruitment (Cohen, Warner, & Segal, 1995; Angrist, 1993). To incentivize higher quality recruits, the Army added additional programs for educational benefits (Angrist, 1993). These programs were repackaged into a new GI Bill that expanded benefits overall (Johnson, 2009).

The Veterans' Benefits Improvement Act of 1984: Montgomery GI Bill

The Veterans' Benefits Improvement Act was passed in 1984 and was later named the Montgomery GI Bill (MGIB) after Mississippi Congressman Gillespie V. "Sonny" Montgomery, (VA, n.d.). Two separate MGIBs were passed; one specifically extended federal educational benefits to National Guard members and reservists (Johnson, 2009). Three years of service and an initial 12-month, $100 contribution allowed the member to receive nearly $36,000 to pay tuition, books, and living expenses. The final modification of the bill allowed for up to $1,473 per month in educational and living expenses, not enough, without additional financial aid, for the pursuit of a four-year degree (Lang & Powers, 2011). As a result, only one third of eligible veterans took advantage of the program (Johnson, 2009). A significant expansion in educational benefits was realized with the passage of the Post-9/11 Veterans Educational Assistance Act (GAO, 2013b).

Post-9/11 Veterans Educational Assistance Act of 2008: Post-9/11 GI Bill

The Post-9/11 GI Bill became effective on August 1, 2009. Under this bill, and in recognition of the "especially arduous" active duty service that followed the terrorists' attacks of September 2001, educational entitlements were greatly expanded to meet four

key goals: "(1) provide parity of benefits for reservists and members of the regular Armed Forces, (2) ensure comprehensive educational benefits, (3) meet military recruiting goals, and (4) improve military retention through transferability of benefits" (Dortch, 2014, p. 1).

Eligibility for the benefits is contingent on the member or veteran serving at least 90 days from September 10, 2001 or if honorably discharged due to a service-related disability, 30 days. For those who served at least 36 months on active duty during this timeframe, full tuition and fees at public institutions are paid. A monthly housing allowance, determined by the veterans' zip code area, and a stipend of $1,000 per month for books and supplies is also paid. Entitlements can be received for up to 36 months, and eligibility remains open for 15 years from the date of separation (Veterans Benefits Administration [VBA], 2012).

Although the benefits may not be enough to cover full costs at private institutions or for out-of-state tuition, additional support is offered for those colleges and universities in the Yellow Ribbon Program. The bill includes provisions for the transfer of the educational benefits to a dependent(s) or a spouse (VBA, 2012). It is expected that the robust benefits' package, along with the increase in Post-9/11 veterans, due to a reduction in military end strength, will heighten participation in the program (Gonzalez, Miller, Buryk, & Wenger, 2015). While not anticipated to have the same level of impact, it is important to understand the historical influence the original GI Bill had on the landscape of higher education.

The GI Bills and Higher Education

The relationship between the military and higher education began with the passage of the Morrill Land-Grant College Act (1862), which required institutions to include a military training curriculum in order to receive financing from the sale of federal lands. The stipulation reflected the utilitarian view that public higher education should support larger social goals. However, with little oversight by the government, the training was minimal, and in some cases, all but gone within a few years. In the early half of the twentieth century, the provision to include Reserve Officers' Training Corps (ROTC) and, more importantly, the creation of the Office of Scientific Research and Development in 1941 strengthened the relationship ties (Abrams, 1989). However, it was the passage of the GI Bill in 1944 that had a sweeping impact on both public and private higher education institutions across the United States.

The framers of the GI Bill anticipated an economic affect, but they, along with many others, grossly underestimated the educational impact (Olson, 1973, 1975). Forecasts of the percentage of veterans who would take advantage of the benefits ranged between 7 – 12% (Mettler, 2005). In the initial year of implementation, enrollment was, in fact, not impressive. However, between 1945 and 1946, with the discharge of millions of service members, veterans headed to college campuses en masse (Olson, 1975). In 1946, enrollment in colleges and universities was 200,000, and by 1947, the number reached over one million. Veterans attending college on a full-time basis were more than double the most optimistic estimates, and those attending vocational education were more than ten times the number anticipated (Mettler, 2005).

Total college enrollment was 75% larger than prewar numbers, and veterans accounted for 49% of the enrollees. To accommodate such numbers, colleges were forced to change almost overnight. Many schools offered priority admission to veterans and began accepting credit for military training and experience (Olson, 1975). Daily teaching hours were extended, and additional classes were offered on Saturdays. The academic calendar was revamped, introducing the quarter system and summer schedules (Frydl, 2009). Practical coursework increased due to the veterans' preference for academics to be connected to employment (Olson, 1973). The sheer numbers of students led colleges to formalize academic scheduling and issue student identification cards. Faculty shortages forced the use of large lecture halls and a reliance on teaching assistants. During this time, student advising and job placement were established for veterans (Frydl, 2009). Federal support and influence also increased with the implementation of the GI Bill.

Many college campuses across the U.S. almost burst at the seams with the student veteran influx. To mitigate shortages of classrooms and housing, the federal government financed expansion efforts. From 1946 to 1947, $700 million of the $1 billion spent on higher education was directly related to the GI Bill (Frydl, 2009). Such investment, as well as the substantial benefits given to the student veterans, led the government to link the approval of financial education benefits and aid to accreditation (Profitt, 1979).

The Korean GI Bill (1952) was the initial vehicle for this link, citing, "SEC. 253. (a) A State approving agency may approve the courses offered by an educational institution when—(1) such courses have been accredited and approved by a nationally

recognized accrediting agency or association." Hence, the establishment of the National Commission on Accrediting accompanied the passage of the Korean GI Bill (1952) and was the impetus for the current system of regional accreditation (Profitt, 1979). While many of the administrative changes brought about by the GI Bill fundamentally transformed the landscape of higher education, it was the veterans, themselves, who altered academia's expectations of them as students.

The Student Veteran and Higher Education

Prior to veterans' arrival on college campuses, some higher education administrators and faculty questioned their academic quality as students and were concerned about their ability to meet academic standards. There were conflicting expectations concerning whether the veteran's war experience would be a liability or an asset in the educational environment (Olson, 1973). Many of these misgivings were put to rest by the veterans' educational accomplishments. As an example, Harvard's class of 1948, which was made up of 85% student veterans, was the highest achieving class in its history (Frydl, 2009). Although generalized, and in some cases romanticized through the media (Clark, 1998), veterans demonstrated more maturity and motivation than their nonmilitary peers, which led to better educational outcomes (Olson, 1973). They were "at least three years older than entering students" (Frydl, p. 332), and many were also married and had young children (Johnson, 2009). While prior to the war marriage could cause a student to be dismissed from school, it now "no longer meant the end of college education" (Olson, 1973, p. 608). In many ways, today's Post-9/11 student veterans share some of the same characteristics of the previous generations of student veterans.

The Post-9/11 Student Veteran Profile

Student veterans have been described as a unique student body within the nontraditional student population (Lang & Powers, 2011). They, like other nontraditional students, may have any of the following risk factors: having no high school diploma, delaying entry into postsecondary education, enrolling part-time, being financially independent, working full-time, having dependents (not including a spouse), or being a single-parent (Queen & Lewis, 2014). Through their analysis of data from the 2011-2012 National Postsecondary Student Aid Study, Molina and Morse (2015) found that 44% of student veterans had four or more of these risk factors. Molina (2015a) found 44% of student veterans were married, 52% had dependents, and 42% worked full-time.

In the recent *Missing Perspectives* report (Zoli, Maury, & Fay, 2015), student veterans cited financial burdens, personal or family obligations, expiration of benefits, health or disability issues, or balancing school and work as barriers to their educational pursuits. On average, these students delayed first entering college from high school by five years (Molina, 2015a). While 85% of those in undergraduate programs were 24 years old or older, their average age on four-year campuses was 33 (Kim & Cole, 2013). Student veterans were also more likely than nonmilitary students to be the first in their family to attend college, to be male, and to be African American (Kim & Cole, 2013; Radford, 2011). In academic year 2011-2012, 6% of student veterans were identified as having a disability (National Center for Education Statistics [NCES], 2015)

The Student Veteran's Path to Educational Attainment

Currently, student veterans account for 4% of all undergraduates (Molina, 2015a). Understanding their journey from college choice to transition, engagement, and their persistence to completion can aid in strengthening efforts to assure their academic success.

College choice and majors. The *Million Records Project*, a study of nearly 900,000 student veteran records, indicated that 80% of veterans enroll in public institutions (Cate, 2014). In 2013, the GAO reported Post-9/11 GI beneficiaries, by percentage, as attending the following education sectors: public schools (38%), for-profit schools (37%), and nonprofit schools (25%) (GAO, 2013b). Radford (2011) reported that military service members and veterans were more likely than nonveterans to enroll in public two-year institutions. Recent research has investigated why student veterans make the institutional choices they make.

Program of study, location, and affordability have all been identified as top reasons for veterans' institutional choice (Radford, 2011). For those veterans choosing to enroll in community colleges, Falkey (2014) found prior attendance, location, and the institution's open enrollment policy influenced their college choice. In fact, 23% of student veterans chose to attend a college within 100 miles of their home (Molina, 2015a). Molina (2015b) conducted logistic and multinomial logistic regression analyses to investigate social, economic, and demographic variables of student veterans in relation to their college choice. The individual's postsecondary educational expectations while in high school and that of their peers' were significant in whether or not the veteran enrolled

in a four-year institution. In addition, the lower the levels of math taken in high school, the more likely they were to enroll in a two-year or for-profit school. Veterans from low socio-economic backgrounds "were 75 percent less likely to have entered college compared to high SES veterans" (p. 107). Beyond college choice, the student veteran's evaluated credits from prior service and preference of major can offer further details about their path to completion (Molina, 2015b).

Most veterans chose not "to pursue education programs and careers which are similar to their prior military jobs" (Zoli, Maury, & Fay, 2015, p. 48); however, this does not necessarily mean they lacked applicable credits from their previous military experience and training. McBain, Kim, Cook, and Snead (2012), found 85% of the institutions they surveyed recognized credit for military training and 63% awarded evaluated credit for the veteran's occupational experience. Unfortunately, none of the research reviewed for this paper included empirical data on how the credit was applied to their new field of study.

Recent analysis revealed 20% of Post-9/11 student veterans were enrolled in a STEM (science, technology, engineering, or mathematics) major (Molina, 2015a). Radford (2011) found student veterans' rates of enrollment as statistically significant in comparison to nonveteran students in the fields of computer and information sciences, engineering, and engineering technology. In addition to these fields, Cate (2014) found student veterans were pursuing health, public service, and business degrees.

Transition. Making the transition from the military to the civilian classroom can present unique challenges for many veterans. To explore what type of support services

are appropriate to meet the needs of student veterans during this time, DiRamio, Ackerman, and Garza Mitchell (2008) interviewed 25 student veterans at three research universities. Sixteen themes emerged from their study. Utilizing the Schlossberg, Lynch, and Chickering adult transition model (1989), the researchers categorized these themes into a depiction of the student veteran's journey into the military, experience while in the military, transition out of military service, and finally, transition to college. Of note was the common theme of the veteran's level of maturity. Many of the students believed their experience in the military, whether through exposure to various cultures or combat, led to a development of maturity above that of non-military students. Because of this gap in maturity level, veterans were unable to relate to these students, and thus desired the camaraderie of other student veterans. Several of the students perceived the classroom environments as biased, causing them to be reluctant to express their views in class. Other students chose not to engage because they preferred to blend in; they did not want to draw attention to their past military experience. However, they sought acknowledgement of their veteran status and recommended faculty gain more knowledge about veterans (DiRamio, Ackerman, & Garza Mitchell, 2008). Zoli, Maury, and Fay (2015) concluded a conflicting view from their national study, which found "servicemembers were comfortable and proud to share their military status and experiences on campus" (p. 48).

Falkey (2014) explored Post-9/11 student veterans' perceptions of their experiences at two- and four-year institutions to discover programs, practices, and policies that may impact their transition to college. While she interviewed 25 student

veterans, 15 were enrolled in a public two-year community college and 10 were enrolled in a public four-year research institution. The community college students described high levels of faculty interaction, yet low interaction with other students, including other student veterans. In contrast, student veterans at the four-year research institution had low interaction with faculty and non-veteran students, yet high levels of interaction with other student veterans. Many of the community college student veterans (11 out of 15) were dissatisfied with the level and quality of administrative support, having been given misinformation concerning their benefits. Many were also not aware of the military or veteran-specific services available to them at the college. Furthermore, they complained of financial concerns due to late processing of their GI Bill benefits by the Veterans Administration and a general sense of difficulty in adjusting to the civilian college environment. These veterans also self-reported they were first-generation college students (Falkey, 2014).

Engagement. In 2010, the National Survey of Student Engagement (NSSE) added a student veteran identifier to their yearly undergraduate survey, which is conducted at four-year institutions across the United States. Kim and Cole (2013) analyzed the 2012 results to investigate student veterans' perceptions of their academic and social integration. The research was a follow-up on the American Council on Education's prior reports that queried institutions on their level of military and veteran support services and programs (Kim & Cole 2013). The sample included 2,505 student veterans/military service students at 132 institutions. The results, although not surprising, offer further insights into this population (Kim & Cole, 2013).

Student veterans and military students were less interested in the social aspects of university life, preferring to focus on academics. They were 15% more likely than their non-veteran peers "to spend at least 10 hours per week preparing for class" (Kim & Cole, 2013, p. 2). They were also more likely than non-veteran students to engage their professors concerning assignments or grades and to describe their relationship with faculty and administrative personnel as positive and supportive. They were less likely to collaborate with fellow students outside of class or to describe their investment in higher education as leading to improvements in more effectively working with others, learning on their own, or contributing to their community. When compared to nonveteran students of the same age range (25 years old or older), student veterans and military students had similar faculty engagement and academic preparation levels. However, they showed higher levels of cultural sensitivity, indicating openness to others' views that may be different from their own. The researchers cautioned that "the traditional engagement model may not be appropriate" (p. 13) for student veterans and military students, adding, "they may intentionally choose not to participate in certain activities because the opportunities to engage on campus are not as important in their stage of life" (p. 14). While these findings add to the higher education engagement literature, it erroneously groups student veterans and military students. These two groups of military-affiliated students can be quite different in their academic goals and have different external commitments and influences. In addition, Kim and Cole (2013) acknowledged the methodology used for the analysis limited the survey response to students of the institutions that participated in the *From Soldier to Student II* report (McBain, Young,

Cook, & Snead 2012). Many of these institutions previously reported increases in institutional support services and programs for student veterans and military students, which could be attributed to the relatively high levels of student engagement (Kim & Cole, 2013). Finally, while NSSE has begun to collect engagement data for student veterans and military students, comparative engagement data from community colleges are not currently available. However, it is forthcoming. The newly revised 2017 Community College Survey of Student Engagement (CCSSE) instrument includes an identifier for current or former military members. The survey item mirrors the NSSE instrument item, asking, "Are you a current or former member of the U.S. Armed Forces, Reserves, or National Guard?" (Center for Community College Student Engagement, 2017). The revision is certainly a step in the right direction for capturing engagement data for military students and student veterans; however, by collapsing the two groups together, key differences in their approach to engagement could be lost.

Persistence. The Pat Tillman Foundation and Operation College Promise (OCP) collaborated in 2011 to investigate the degree completion rates for military members and student veterans attending four-year institutions for the 2009 - 2010 academic year. One hundred sixty students were randomly selected from those using educational benefits at seven colleges and universities. The institutions were pilot schools for the use of OCP's Graduation Probability Indices (GPI), a tool for assessing military students' and student veterans' persistence and graduation rates. The study focused on military students' and student veterans' grade point averages (GPAs), number of credit hours pursued, persistence rates, and the utilization rates of veteran-specific services as indicators of

progress toward degree. As compared to non-military students, the military and veteran students had higher GPAs and persistence rates. The two groups of students averaged similar credit hours, and the military-affiliated students took advantage of the services offered to them (Lang & Powers, 2011). Although the findings seem to indicate positive progression for military and veteran students, the findings were descriptive. In addition, the data did not differentiate between military students and student veterans.

Sibson (2014) examined Post-9/11 GI Bill veterans', or their beneficiaries', first-year persistence rates in three different types of institutions, located in Southeastern Virginia: a four-year proprietary school, a public four-year institution, and a public two-year community college. The study used persistence data from the Fall 2009 to Fall 2010 semesters and included 19,065 student records. Although she found a low utilization rate of GI Bill benefits, those who did take advantage of the funding were approximately 9 percent more likely to be retained than those who did not use their benefits. For Fall 2009, age (18-22 years old) and GI Bill use were statistically significant in relation to persistence; whereas, for Fall 2010, gender (female), age (18-22 year olds and 38-42 years olds), benefit usage, and ethnicity (non-Caucasian) were all statistically significant. Overall, however, the persistence rate of the beneficiaries was lower than the rate for all students in Virginia (74.15%) and lower than the national average (71.8%). Applying a binary logistic regression for further analysis, Sibson found statistically higher persistence rates for beneficiaries "who were closer to the traditional age of students and non-Caucasians" (2014, p. 119). Finally, the use of the Post-9/11 GI Bill was statistically significant only for the public, two-year community college. No variables were

statistically significant for persistence rates between the "general population of students" (p. 125) and beneficiaries using the Post-9/11 GI Bill. The variable of the GI Bill user is a limitation of this study; it does not distinguish the student who is a veteran from those who may be dependents of a veteran. This limits the ability to interpret the student veterans' persistence rates.

Mentzer, Black, and Spohn (2014) analyzed correlations between academic, financial, and social supports and military-connected students' persistence rates at a private, non-profit Christian university and compared these rates to nonmilitary students. The students included in the study were enrolled in an on-line graduate program. Their findings suggest a statistically significant positive relationship between institutional and academic support mechanisms and persistence and a negative association between loans and persistence. While the academic support results mirror much of the prior research findings in student persistence (Pascarella,, Salisbury, & Blaich, 2011; Pascarella, Seifert, & Whitt, 2008; Terenzini & Pascarella, 1980), the results are not clear, specifically, for student veterans, since the military population included active duty personnel and dependents. Two recent studies analyzed variables that may influence a student veteran's intent to persist at a community college.

O'Rourke (2013) applied the Bean and Metzner's (1985) model of nontraditional student attrition with an additional set of variables for military service factors to study persistence outcomes for 261 student veterans enrolled in three Southern California community colleges. College GPA and intent to persist represented the persistence variables. His analyses of data, drawn from an on-line survey, revealed military GPA

(earned in initial military occupation/specialty training) had more of an influence on college GPA than high school GPA; however, the student veteran's measure of their academic integration was the strongest predictor of GPA. The veterans' perspective on their past military service was most predictive of their intent to persist in their education or training; a positive perspective led to a higher level of intent to persist (O'Rourke, 2013). This study's population did include some active duty, reservists, and National Guard and did not identify Post-9/11 beneficiaries separately from other VA educational program beneficiaries.

Sitzes and Akroyd's (2016) study incorporated social support theory with the Bean and Metzner model (1985) to investigate the influence of institutional support mechanisms on a student veteran's intent to persist. Survey results from 348 student veterans enrolled in North Carolina community colleges were analyzed. Using a significance level of $p = .10$, they found student veterans' perceived importance of family and friends' support, veteran-specific financial aid counseling, veteran-specific counseling and psychological services, and child care were statistically significant predictors of intent to persist. Financial aid/tuition assistance counseling had the highest odds ratio at 6.179, making it the strongest predictor of a student veteran's intent to persist (Sitzes & Akroyd, 2016).

Completion. Buck (2014) analyzed veterans' educational outcomes and civic engagement in relation to their use of the Post-9/11 GI Bill. The study utilized a quantitative approach and applied rational choice theory, reciprocity theory, and social construction theory. Post-9/11 veterans were significantly more civically engaged than

non-veterans within the same age group. The results indicated female veterans used their educational benefits at a higher rate than male veterans, and while all veterans increased their educational levels, the results were more pronounced for female veterans. The student data used to explore veterans' educational attainment levels were not matched; rather a compilation of two national databases, the U.S. Census Bureau's *Current Population Survey* and the Veteran Affairs' *National Survey of Veterans,* as well as the author's survey, *Project Vet,* framed the data analysis. However, a more granular investigation is needed in order to verify the timing of the member's use of the GI Bill benefits with the same member's educational outcome after service. The lack of a consistent methodology to measure student veterans' completion rates in higher education has long been recognized (Evans, Pellegrino, & Hoggan, 2015).

The 2014 *Million Records Project*, realized through a partnership between the Student Veterans of America, the National Student Clearinghouse, and the U.S. Department of Veteran Affairs, substantially rectified many of the limitations in previous studies on student veterans' educational attainment. With a sample size of 898,895 veterans over 10 years, it is the largest study of its kind. The study found that slightly over half (51.7%) of the veterans who used their Montgomery GI Bill or Post-9/11 Bill for postsecondary education completed within this timeframe. These rates of completion were highest at public institutions, followed by private non-profit and then for-profit institutions. By linking data from the Veterans Administration benefit database to the National Student Clearinghouse data, a more structurally sound framework was created.

However, the framework was built upon outcome data without enrollment status, which left a void in persistence and non-completer rates (Cate, 2014).

Alschuler and Yarab (2016) examined persistence and completion rates for 826 military students and student veterans at a public, four-year research university, located in the Midwest. At 50.5%, their six-year graduation rate surpassed that of the university's nonveteran graduation rate and was in line with the 51.7% graduation rate for military students and student reported in the 2014 *Million Records Project* for four-year institutions (Cate, 2014). The study did not include correlative or predictive analyses of variables that may have influenced the graduation rate.

The recently published National Veteran Education Success Tracker (NVEST) Project is a follow-up to the *Million Records Project*. The *NVEST Project* focused on academic outcome measures and tracked enrollment data for "student veterans who initially used their Post-9/11 GI Bill between August 1, 2009 and December 23, 2013" (Cate, Lyon, Schmeling, & Bogue, 2017, p. 20). Certificate and degree completion data were assessed as of September 2015. The data collection process was similar to the first project, in that it relied on a partnership between the Student Veterans of America, the National Student Clearinghouse, and the U.S. Department of Veteran Affairs. The sample size was 822,327 student veterans; however, active duty members were included if they began using their Post-9/11 GI Bill during the study's timeframe. According to the findings of the project, 53.6% completed a certificate or degree, 18% were still enrolled, and 28.4% stopped out. Interestingly, 31.9% of the sample were "under 19" at initial use of the Post-9/11 GI Bill benefits, and at the public two-year level, 68% of the

student veterans were "under 25". While the report adds significantly to the literature on Post-9/11 student veterans, it is still solely descriptive (Cate, Lyon, Schmeling, & Bogue, 2017). Coupled with the increased focus on student outcome data for military students and student veterans are calls for employing or strengthening veteran-specific support services and programs.

Veteran-Specific Support Programs and Services

Much of the literature pertaining to student veterans' challenges concludes with recommendations for institutional support structures. Based upon the themes from their research, DiRamio, Ackerman, and Garza Mitchell (2008) conceptualized a practical, holistic model for designing support services for student veterans. Central to the model were identifying student veterans (balancing self identification with privacy), mandating student veteran orientation, and using a mentor or "transition coach" (p. 93). The seven supporting components of the model included: financial aid services, counseling services, student organizations, disability services, academic advising, faculty training, and effective institutional research in order to monitor and take corrective actions to assure completion success for this population of students. Echoing many of the same recommendations, Zinger and Cohen (2010) suggested meeting the needs of veterans through the creation of a veteran center, student veteran organizations, counseling services, and training for faculty and staff. Wheeler (2012) recommended a Veterans' Service Office, a dedicated social area, academic advising, counseling, veteran-specific orientation, and training for faculty and staff. Identifying whether or not institutions are

implementing these promising practices is essential in understanding their commitment to the success of student veterans.

In 2012, the American Council on Education surveyed 690 institutions about their support programs for student veterans (McBain, Kim, Cook, & Snead, 2012). Sixty-two percent provided some type of dedicated service or program, and 71% of the colleges and universities indicated these programs were part of their strategic planning initiatives. Almost all of the institutions had academic support structures in place for student veterans. Sixty-seven percent had financial aid and tuition assistance counseling available, and 33% offered veteran-specific scholarships. Counseling services for post-traumatic stress disorder was available at 84% of the schools, and 71% had a dedicated veterans' office. Training for faculty on the issues military service and veterans face was identified as a top priority; 35 – 55% of the schools offered such targeted training.

A similar, yet larger national survey was conducted in 2014. The National Center for Education Statistics (NCES) surveyed nearly 1,650 private and public Title IV-eligible institutions in order to identify the programs and services designed specifically for military service and veteran students. Nineteen percent of the institutions had a designated social area, and 36% had a veteran or student military organization. Fourteen percent had formal advising or mentoring programs, and 12% had peer-mentoring programs (veteran-to-veteran). Other services included: academic support or tutoring (17%), career planning (24%), academic advising (27%), and financial aid counseling (44%). Fourteen to 21% offered staff and faculty training on topics specific to this student population (e.g., military service, physical health issues, and student transition)

(Queen & Lewis, 2014). The Department of Education is encouraging institutions to apply many of these practices through the 8 Keys to Veterans' Success initiative and the adoption of the Principles of Excellence guidelines.

The Departments of Veterans Affairs, Education, and Defense collaborated with a variety of stakeholders to develop the 8 Keys to Veterans' Success, which include the following strategies for supporting student veterans:

1. Create a culture of trust and connectedness across the campus community to promote well-being and success for veterans.
2. Ensure consistent and sustained support from campus leadership.
3. Implement an early alert system to ensure all veterans receive academic, career, and financial advice before challenges become overwhelming.
4. Coordinate and centralize campus efforts for all veterans, together with the creation of a designated space for them (even if limited in size).
5. Collaborate with local communities and organizations, including government agencies, to align and coordinate various services for veterans.
6. Utilize a uniform set of data tools to collect and track information on veterans, including demographics, retention, and degree completion.
7. Provide comprehensive professional development for faculty and staff on issues and challenges unique to veterans.
8. Develop systems that ensure sustainability of effective practices for veterans (U.S. Department of Education, n.d.).

Similarly, institutions receiving VA funding can voluntarily commit to the measures outlined in the Principles of Excellence. These principles encompass the following:

1. Provide students with a personalized form covering the total cost of an education program.
2. Provide educational plans for all military and Veteran education beneficiaries.
3. End fraudulent and aggressive recruiting techniques and misrepresentations.
4. Accommodate Service members and Reservists absent due to service requirements.
5. Designate a point of contact to provide academic and financial advice.
6. Ensure accreditation of all new programs prior to enrolling students.
7. Align institutional refund policies with those under Title IV, which governs the administration of federal student financial aid programs.

By formally committing to either of these initiatives, institutions garner national recognition. More than 6,000 higher education institutions have committed to the Principles of Excellence (VA, n.d.b.) and 2,000 have committed to the 8 Keys to Veterans' Success (U.S. Department of Education, n.d.).

The Department of Veterans Affairs has also developed a VetSuccess on Campus (VSOC) program targeted to "to help Veterans, Servicemembers, and their qualified dependents succeed and thrive through a coordinated delivery of on-campus benefits assistance and counseling, leading to completion of their education and preparing them to enter the labor market in viable careers" (VA, 2017, para. 1). The VSOC program can be

found on 94 college campuses across the United States. The VA funds the program, as well as the VA Vocational Rehabilitation Counselor that is on site. Many campuses also have a VA Vet Center Outreach Coordinator to assist with community and on-campus outreach efforts (VA, 2017).

While all of these programs and practices are promising, there is little research on how they translate to student veteran success (Sitzes & Akroyd, 2016). In fact, there is a dearth of recent research on student veterans that applies student persistence frameworks to understand the variables that influence their educational progress and completion rates.

Student Persistence Models

The theoretical models of Spady (1970, 1971) are the foundation for much of the literature on college persistence. Spady's (1970) theory of student departure described the complexity of the dropout process for undergraduate students. Spady's model was an adaptation of Durkheim's suicide theory (Metz, 2005) and emphasized the need for a sense of shared values between the student and the institution (Spady, 1970). This affiliation would act as a catalyst for social integration of the student and increase satisfaction with the institution. With a heightened satisfaction rate, the student's commitment to the institution would increase, thus decreasing the chance for dropout. Interestingly, Spady's longitudinal study of 683 freshmen (1971) found that academic performance was the most significant factor in preventing student attrition. Furthering the importance of social integration, Astin's (1970) "input-process-output" (IPO) model was conceptually a talent development model. The essence of the theory was that involvement within the institution would further develop the student's innate talents, and

the level of involvement affected persistence. Astin's later research studied how financial aid use influenced persistence, finding single source aid was more beneficial in terms of persistence than a package of various types of financial aid (Metz, 2005).

Tinto's 1975 model for student departure capitalized upon his prior work with Cullen (Metz, 2005), and incorporated key components of Spady's and Astin's theories. Tinto desired to understand student behaviors and how these behaviors promoted or lessened persistence. His model offered more details and included a distinction between the academic and social domains. A student's family background and individual attributes, as well as past educational experiences informed the student's initial commitment to the goal of higher education and to the institution. The premise of the model was that a high level of initial commitment promoted academic and social integration, which, in turn, increased commitment levels and lessened the rate of departure (Tinto, 1975). Analyzing Tinto's 1975 model, Braxton, Sullivan, and Johnson (1997) identified thirteen points of interaction between the student and the institution, which they codified into measurable hypotheses. They applied these to the results of numerous empirical studies to test the validity of the model. In *Understanding and Reducing College Student Departure* (2004), Braxton, Hirschy, and McClendon consolidated the findings from the prior analysis with additional studies to determine the level of empirical support at the aggregate level, as well as the institutional level. Five of the propositions were strongly supported at the aggregate level and at the residential college/university level, and two were strongly supported at the commuter institution level. At the two-year college, only one of the hypotheses, *student entry characteristics directly affect the student's likelihood*

of persistence in college, was supported by strong empirical evidence. The authors note "indeterminate support" (p. 17) for the other hypotheses due to the dearth of research applying Tinto's model to persistence in community colleges (Braxton, Hirschy, & McClendon, 2004).

Bean (1980) believed that clustering the variables of the previous models did not allow for the determination of significance, thus, he developed a causal model for persistence using path analysis. He applied the organizational theory of employee turnover to student attrition and underscored the importance of institutional-level analysis. He also did not prescribe a value to attrition, citing, "not all student attrition is bad" (p. 157). The variables in his model included student background characteristics, organizational determinants, satisfaction, and institutional commitment. His longitudinal study of more than 1,000 freshmen at a four-year university found variations among men and women's reasons for leaving college, although the level of institutional commitment was the most critical factor for both. Bean's model blended Spady's integration process with Tinto's aspects of goal commitment and added attitudinal variables. The interaction between the student and the institution (organizational determinants) influenced the student's level of satisfaction, ultimately influencing persistence.

Pascarella and Terenzini extensively tested Tinto's model of student departure and furthered the literature on student persistence (Metz, 2005). Much of their work upheld the validity of the model and the central components of academic and social integration (Pascarella, Smart, & Ethington, 1986). Their longitudinal study of freshman at Syracuse University discovered that students who had informal faculty interactions

were significantly more likely to persist (Pascarella & Terenzini, 1980). Their further study of 763 freshman of a residential university found a stronger direct effect for social rather than academic integration on the persistence for women, while academic integration was more of a direct influence than social integration for male students. Pascarella and Terenzini further found "statistically significantly compensatory interactions between social and academic integration and between institutional and goal commitment" (1983, p. 225). For example, if a student had a low level of integration in one of the areas (social or academic), but the other area was high, the impact on persistence would still be positive. The same was true in respect to the student's commitment level to the institution or educational goal (Pascarella & Terenzini, 1983).

Cabrera, Nora, and Castañdeda, (1993) found that by combining Tinto's (1975) and Bean's (1980) models, the effects of environmental factors became more predominant, suggesting "that encouragement and support from significant others as well as other environmental factors should be considered and incorporated into conceptual frameworks examining student persistence" (pp. 135 – 136). The role of external environmental factors was further exemplified in Bean and Metzner's conceptual model of attrition for nontraditional students.

The increase in nontraditional student enrollment in higher education and their high rates of attrition led Bean and Metzner (1985) to conduct a thorough review of the student attrition literature and synthesize the results into a conceptual model of nontraditional student attrition (Figure 2.1). The framework is designed as a path model, identifying direct and indirect effects on the dependent variable of "dropout." Bean and

Metzner (1985) proposed that four sets of variables (background and defining, academic, environmental, and intent to leave) primarily influence a nontraditional student's decision to drop out.

Background and defining variables included age, enrollment status, residence, educational goals, high school performance, ethnicity, and gender. These variables were similar to the pre-entry characteristics of the traditional student attrition model and were "expected to affect how a student will interact with the institution" (Bean & Metzner, 1985, p. 490). Educational goals and high school performance were expected to have the highest predictability of college academic performance. The model assumed part-time enrollment status for nontraditional students, anticipating this variable be controlled during analysis.

Academic variables included study habits, academic advising, absenteeism, major certainty, and course availability. These variables were expected to directly affect the academic outcome of college grade point average (GPA) and to be the "primary way in which nontraditional students interact with the institution" (Bean & Metzner, 1985, p. 492). The model proposed that a high college GPA has a negative relationship to a student's intent to leave.

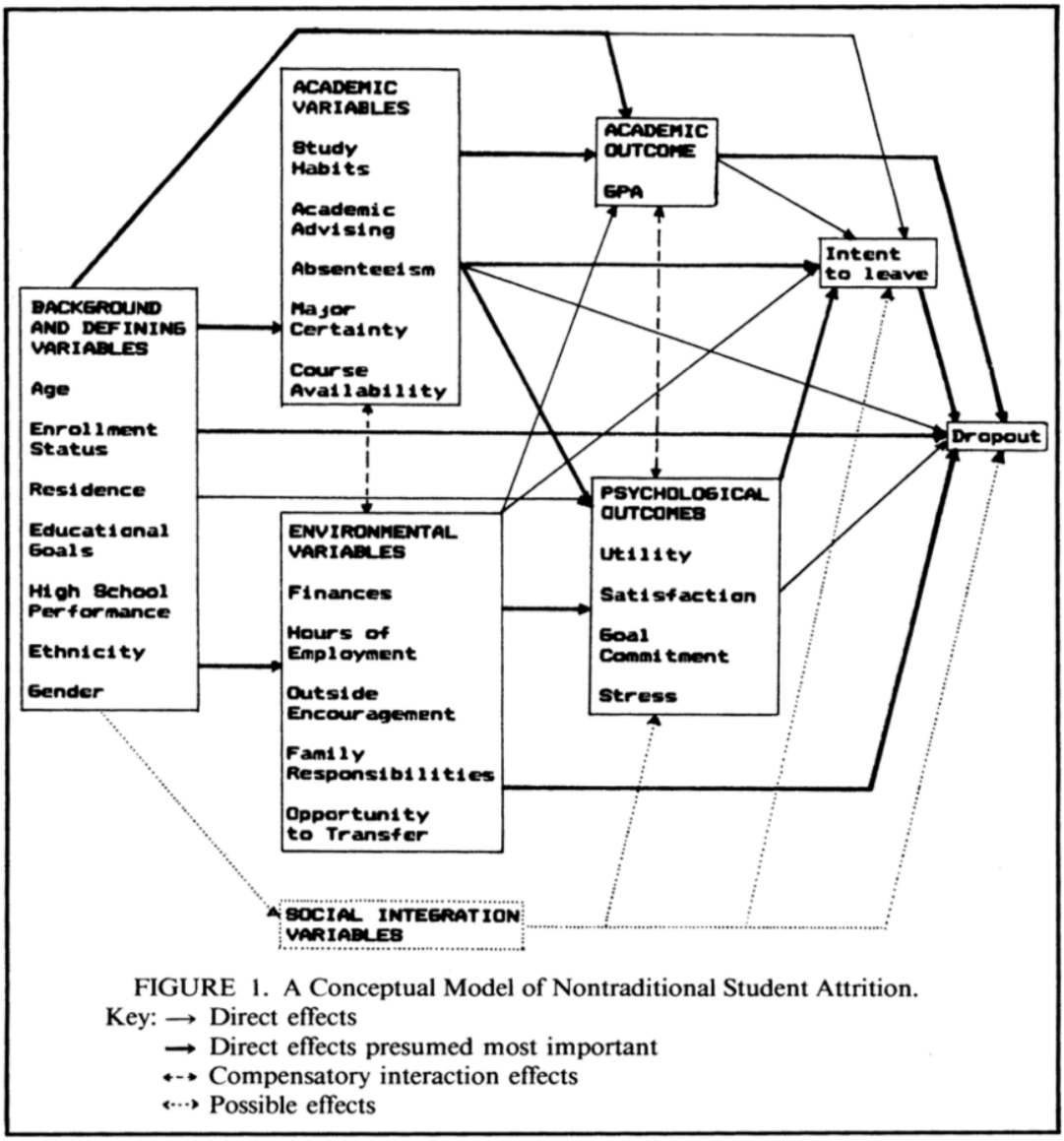

Figure 2.1. Bean and Metzner's (1985) conceptual model of nontraditional student attrition. Reprinted from "A Conceptual Model of Nontraditional Undergraduate Student Attrition," by J. P. Bean and B. S. Metzner, 1985, Review of Educational Research, 55(4), p. 491. Copyright 1985 by SAGE Publishing. Reprinted with permission (see Appendix).

Environmental variables included finances, hours of employment, outside encouragement, family responsibilities, and opportunity to transfer. These variables were external to the college environment and had the largest direct effect on the student's

intent to leave. These also had an indirect effect on student attrition through the psychological outcomes. Bean and Metzner (1985) emphasized the role of these variables over those related to social integration for nontraditional students. In addition, environmental variables were believed to compensate for low levels of academic support. Yet, the opposite was not believed to be true; high levels of academic support did not compensate for low levels of environmental support. Poor environmental factors masked the positive effects of positive academic variables.

A student's intent to leave was the strongest predictor of student dropout in the model. This variable was influenced by the academic variables; however, the psychological outcomes were the primary influencer. As such, the psychological outcomes indirectly affected student dropout.

The psychological outcomes represented students' perception of the practical value of their education to lead to employment (utility), their educational satisfaction, their goal commitment, and their level of stress. The model's academic and environmental variables directly affected a student's psychological outcomes. These outcomes also had a compensatory interaction with the academic outcome. If a student believed in the utility of the degree they were pursing, were satisfied with their experience, were committed to the goal of degree completion, and had low levels of stress (psychological outcomes), these attitudes compensated for a student's low GPA (academic outcome) and strengthened the likelihood that the student remained in school. The academic outcome could have a direct effect on dropout when the student's GPA was so low that it resulted in involuntary departure (Bean & Metzner, 1985).

DiRamio and Jarvis (2011) adapted Tinto's model of student departure as "an introductory discussion of student veterans' persistence and academic success" (p. 36). The student's pre-entry attributes, included in Tinto's model, were expanded to include variables for financial matters, health concerns and disabilities, psychological and adjustment disabilities, and skills and abilities gained through military service. While goal and institutional commitments were legacy variables from the Tinto model, the authors included an influencing factor for external commitments. In addition, the adapted model incorporated many of the recommendations for increasing academic and social integration from qualitative research on student veterans, e.g., participation in a veteran-specific orientation, mentorship or tutoring by a fellow veteran, membership in a student military organization on campus, use of career services, and interaction with faculty and other students (those with military experience and those without military service). The authors confessed the model is "mostly theoretical" (p. 50) and lacked supporting empirical evidence, yet contended it was a "starting point and a framework for future research" (DiRamio & Jarvis, 2011, p. 50). Vacchi's (2012) review of the adapted model underscored its inadequacy in understanding student departure for veterans. He noted that although the authors recognized student veterans as nontraditional students, they over-relied on traditional student departure research by retreating to Tinto's framework (1975). In a statement before the House Veterans' Affairs Committee, Subcommittee on Economic Opportunity, Gonzalez, Miller, Buryk, and Wenger (2015) underscored the similarities between the nontraditional student population and student veterans and cited

the potential for using this population "as a benchmark to measure veterans' educational progress" (p. 2).

Conceptual Framework

The Bean and Metzner (1985) conceptual model of nontraditional student attrition served as a guide for this quantitative study of Post-9/11 student veterans enrolled in a Texas community college. Bean and Metzner (1985) noted that although the "the longitudinal process of attrition is expected to be similar for nontraditional students regardless of their institutional setting or student subgroup affiliation" (p. 530), the influencing variables would differ among subgroups and by type of institution. Narrowing the focus to a specific subgroup at one type of institutional setting allows for a better understanding of the group's process of attrition (Bean & Metzner, 1985).

The purpose of this study was to seek such an understanding for Post-9/11 student veterans, a distinct group within the nontraditional student population (Lang & Powers, 2011). There is a "lack of clarity on student veteran postsecondary academic outcomes" (Cate, 2014, p. 16); as such, this study was exploratory and relied on extant data. An adaptation to the model was required in order to reflect the background and defining variables, academic outcome, and environmental variables relevant to the study's focus on student veterans. The inclusion of other variables was limited to those available through institutional and National Student Clearinghouse data; therefore, academic variables (as defined in the model) and psychological outcomes were excluded from the adapted model. The academic outcome of first-term cumulative grade point average (GPA) was used as the academic variable in the adapted model. The level of Post-9/11

GI Bill eligibility and the use of financial aid were used as proxies for environmental influences.

A significant departure from the nontraditional student attrition model (Bean & Metzner, 1985) was that of the outcome, dependent variable. This study focused on student veterans at a community college; therefore, the definition of student success was broadened to include completion of an associate degree or certificate, or transfer to a four-year institution. This definition of success represents the multi-faceted mission of community colleges, from workforce preparation through two-year terminal degrees and certificate programs to enabling transfer to four-year institutions (Nevarez & Wood, 2010). It also represents two of the metrics found in the Voluntary Framework of Accountability advocated by the American Association of Community Colleges as a more "sector-appropriate framework" for measuring the institutional effectiveness of community colleges (American Association of Community Colleges [AACC], 2012).

Figure 2.2 depicts the adapted conceptual model that was used to analyze variables that may influence completion or transfer ("Success") by student veterans, enrolled at a Texas community college. The model is meant to create a foundation from which later research can expand.

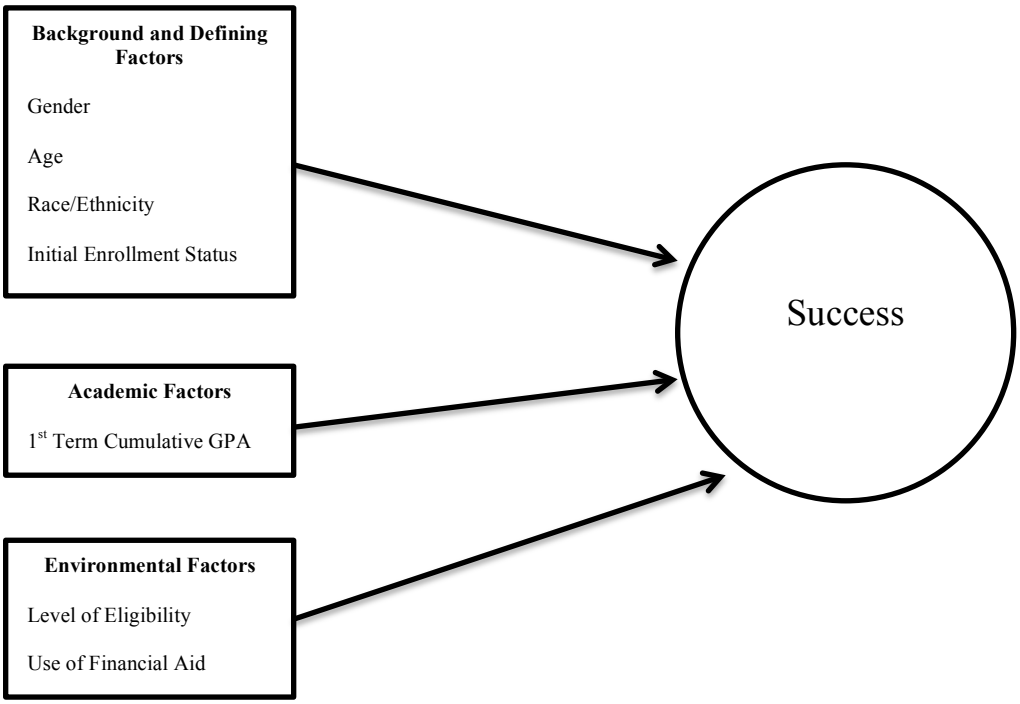

Figure 2.2. Adapted conceptual model for student veteran success.

Summary

This literature review outlined relevant and current literature pertaining to the study's purpose and research focus. The premise of the original GI Bill and the subsequent modifications were described, followed by the historical influence of the bill on higher education. A portrait of today's Post-9/11 student veterans and a synthesis of the research literature about their experiences making the transition into, navigating through, and completing higher education were presented. As the study focuses on student progress and completion, the foundational student persistence models were briefly outlined. Finally, the choice to use the Bean and Metzner (1985) model as the conceptual framework for the study was discussed, as was the rationale for adaptation.

The review revealed that aside from statistical reports, there is little written on student veteran completion and transfer rates using theoretical frameworks and advanced statistics. The data are particularly scarce at the community college level. This study expands the research literature on the educational outcomes of veterans by addressing this gap and informs a multitude of stakeholders, from higher education policymakers and administrators at the federal, state, and institutional levels.

Chapter 3: Methodology

In recent years, there has been an increased focus on the availability of support services for student veterans at institutions of higher education (McBain, Young, Cook, & Snead, 2012; Queen & Lewis, 2014). A number of qualitative research studies emphasized the importance of such services in aiding veterans as they transition from a military environment to a civilian campus (DiRamio, Ackerman, & Garza Mitchell, 2008; Falkey, 2014; Rumann, 2010; Wheeler, 2012). Yet, evidence-based analysis of the educational outcomes of student veterans remains scarce in the research literature. The data that are available tend to be aggregated at the institutional level, combining 4-year and 2-year colleges and universities, and at the student level, combining military students and student veterans. While there has been an increase in descriptive data (Cate, 2014; Cate, Lyon, Schmeling, & Bogue, 2017), there is a lack of granular analysis at the institutional level, beyond persistence. The purpose of this study was to address these gaps in the literature. Specifically, a quantitative approach was used to explore the variables that may influence the completion and transfer rates of Post-9/11 student veterans at a Texas community college. This type of methodological inquiry is appropriate in that it aims to understand the relationship of factors to an outcome (Creswell, 2009).

This chapter describes the methodology used to address the research questions of the study. It begins by stating the research questions and outlining the hypotheses that were tested and continues with an explanation of the research design and data collection methods. The chapter further describes the variables in the study and the rationale behind

their selection. Lastly, this chapter provides a summary of the statistical analysis methods chosen, based upon the hypotheses of the study.

Research Questions

This section defines the research questions of the study. For ease of the analytical design, all hypotheses will be presented as null hypotheses. Findings from recent student veteran research (Cate, 2014; Cate, Lyon, Schmeling, & Bogue, 2017; Barnhart, 2011; Buck, 2014; Molina & Morse, 2015; O'Rourke, 2013; Radford, 2011; Zoli, Maury, & Fay, 2015; U.S. Department of Veterans Affairs [VA]), 2015) and nontraditional student persistence research (Bean & Metzner, 1985) informed the research questions and design. The research questions guiding the study and hypotheses were:

RQ1: Is there a significant difference in background/defining factors between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not?

H_0: There are no significant differences in background/defining factors between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not.

RQ2: Is there a significant difference in the academic factor between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not?

H_0: There is no significant difference in the academic factor between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not.

RQ3: Is there a significant difference in environmental factors between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not?

H_0: There is no significant difference in environmental factors between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not.

RQ4: What factors best predict student veterans' success in completing a degree/certificate or transferring to a four-year institution?

H_0: No factors are predictive of a student veteran's completion of a degree/certificate or transfer to a four-year institution.

Research Design

This study was nonexperimental; the independent variables were not manipulated and the pre-existing groups of student veterans (those that were successful and those that were not) were non-equivalent (Gravetter & Wallnau, 2013). A correlational research design was used to answer the research questions and test the hypotheses. The design was appropriate for the study in that it employed several variables, chosen based upon a theoretical framework, to identify possible relationships with an outcome variable (Mertens, 2010). The construct of the study was a broad longitudinal cohort analysis that was reliant on secondary data that was collected from pre-existing institutional and National Student Clearinghouse datasets.

Site Selection

The type of higher education institution and state location were deliberate choices. Thirty-eight percent of student veterans enroll in public two-year institutions, higher than any other type of higher education institution (Molina & Morse, 2015), yet the field of research related to student veterans at community colleges is extremely scarce. The choice of selecting a community college in Texas was based upon VA reports that identify the state as the fifth highest degree granting state for student veterans and only behind California in total veteran population and number of processed VA educational benefits (VA, 2015).

The setting for the study was a two-year public community college located in Texas. With a total enrollment of over 40,000 students, it is classified as a very large, urban institution. The Southern Association of Colleges and Schools Commission on Colleges regionally accredits the college to confer associate-level degrees and certificates. The college has formally pledged to the Principles of Excellence and voluntarily affirmed commitment to the 8 Keys to Veterans' Success, making it an official 8 Keys Site. In addition, there is a VetSuccess program located at the main campus.

Study Population

The population for this study included all student veterans, who were utilizing the Post-9/11 GI Bill, while enrolled for the first time at the two-year public community college in Texas between Fall 2012 and Fall 2013. Staff, at the selected institution, input the type of veteran benefit by chapter of the 38 U.S. Code Part III – Readjustment and

Related Benefits in the student record, thus identification of Post-9/11 student veterans was made by selecting those coded with "33". Chapter 33 correlates with the Post-9/11 Educational Assistance Act (2008). In addition, the institution inputs the level of Post-9/11 GI Bill eligibility, e.g. 33-60, which corresponds to 60% eligibility. The level of eligibility was used as an independent variable in the study. The population size of the study was N = 585.

Data Collection

Data for this study was obtained from secondary institutional data and National Student Clearinghouse data, following two institutional review board approval processes. First, approval was sought and granted from The University of Texas' (UT) Institutional Review Board (IRB), then an application for review of research proposals was submitted to the selected college's Research Review Committee. Upon the college's approval, student veteran enrollment data between Fall 2012 and Fall 2013 was requested, along with academic and degree data. The community college point of contact for the data also had access to National Student Clearinghouse data; therefore, transfer data was also included in the dataset. It was expected that student data, beginning in 2012 would be more comprehensive than the prior years, since Executive Order No. 13607 was issued in April 2012. This order requested all institutions that receive U.S. Department of Veteran Affairs (VA) payments to begin tracking and reporting student veteran data (Executive Order No. 13607, 2012). Certificate and degree data were assessed as of Fall 2016. Transfer out data was tracked from last fall enrollment at the community college to the next fall enrollment at a public or private four-year institution.

Multiple files were received, resulting in a relational data structure that had to be consolidated prior to cleaning the data. All files were password protected. Confidentiality was assured throughout the study; no students were contacted, and no identified or identifiable student data was part of the data collection.

Variables

This section offers a summary of the independent and dependent variables that were used in the study. The variables were drawn from the research literature pertaining to the conceptual framework and recent studies of student veterans' postsecondary educational progress and attainment discussed in Chapter 2.

Independent Variables

Through their review of the student attrition literature, Bean and Metzner (1985) found age, enrollment status, and residence to be distinguishing characteristics of the nontraditional student population. They found these variables to act as estimations of environmental variables, such as hours of employment, family responsibilities, and finances, which could become barriers to accomplishing educational goals (Bean & Metzner, 1985). The site selected for the current study was a non-residential, commuter community college; therefore, residency was controlled. The independent variables for this study were grouped into three sets of variables: background and defining, academic, and environmental. The amount of student data available at the institutional level impacted the final choice of variables.

Background and defining variables. The four background and defining variables for the study included: gender, age at time of enrollment, race/ethnicity, and

initial enrollment status. Gender, age, and race/ethnicity are consistently used as variables in student persistence research (Astin, 1970; Bean & Metzner, 1985; Pascarella & Terenzini, 2005; Tinto, 1975) and are further supported for inclusion in this study by the current research findings on student veterans.

While female Post-9/11 veterans represent a smaller percentage of student veterans (VA, 2015), they are more likely to enroll in college (National Center for Veterans Analysis and Statistics [NCVAS], 2015) and have been found to have higher rates of completion and higher levels of education than their male counterparts (Buck, 2014; VA, 2015). Though the dataset did not include Post-9/11 student veterans, Barnhart's (2011) analysis of the Beginning Postsecondary Survey (BPS:04/06) found that younger, female student veterans, as well as nonveteran female students were more likely to persist than male students. In the current study, gender was operationalized as a dichotomous variable prior to performing the logistic regression analysis.

Age is a defining characteristic of student veterans (Kim & Cole, 2013; Molina & Morse, 2015; Radford, 2011) and is one of the constructs used in categorizing them as part of the nontraditional student population (Lang & Powers, 2011). Veterans between the ages of 25 and 35 constitute 58% of all Post-9/11 GI Bill claimants (VA, 2015), and the average age of student veterans beginning their postsecondary degree is 25 years old (Molina & Morse, 2015). Nontraditional-aged student veterans have been found to take longer to complete associate degrees than traditional students (VA, 2015). The value for age within the current study was reflective of the student veteran's age at time of enrollment and was kept as a continuous variable during all analyses.

Bean and Metzner (1985) posited that for the minority student categories of the race/ethnicity variable there would be an indirect effect on "drop-out" through a negative, direct effect on college GPA. Semer (2015) found a statistically significant, negative effect on college GPA for non-white student veterans, and Barnhart (2011) found that Black or African-American student veterans at the two-year college level "were 46% less likely to persist than their White counterparts" (p. 122). In the current study, categories for the race/ethnicity were kept as categorical variables for initial analysis and then dummy coded for further exploratory analysis.

Enrollment status referred to whether the student was enrolled part-time (fewer than 12 semester hours) or full-time. Part-time enrollment is considered by the Department of Education, National Center for Education Statistics (NCES) as one of the seven possible characteristics of nontraditional students and to negatively impact degree completion. While the nontraditional student attrition model (Bean & Metzner, 1985) assumed part-time enrollment status for nontraditional students, the Department of Veterans Affairs (2015) found that student veterans who use their Post-9/11 GI Bill educational benefits are six times more likely to enroll full-time, rather than part-time. For community college students, full-time initial enrollment status leads to a higher likelihood for educational progress and completion during the first three years of enrollment (College Board, 2012). The initial enrollment status variable was categorical and was operationalized as a dichotomous variable (0 = Part-time, 1 = Full-time).

Academic outcome. In the Bean and Metzner (1985) model of nontraditional student attrition, college grade point average (GPA) represented the model's academic

outcome and was expected to have a direct effect on attrition. Barnhart's (2011) finding that student veterans who dropped out had higher college GPAs than those that persisted was contradictory, yet the association between college GPA and student veterans' educational completion has not been heavily researched in recent years. The research that is available is in relation to college GPA as the outcome variable or as a predictor of intent to persist.

In 4-year institutions, findings for military-affiliated students' GPA in comparison to their civilian peers has been mixed. Lang and Powers (2011) found their GPAs to be higher; whereas, Durdella and Kim (2012) found they were more likely than their civilian peers to have lower GPAs. In terms of intent to persist, Sitzes and Akroyd (2016) did not find self-reported college GPA to be a statistically significant predictor. In the current study's model for analysis, first-term cumulative GPA was used as the academic variable. To maintain variance and to guard against reducing its correlation with the study's other variables (Keith, 2014), GPA was kept as a continuous variable.

Environmental variables. The student veteran's level of Post-9/11 GI Bill eligibility and use of financial aid were proxies for the environmental variable of finances found in the conceptual framework. It represents the "students' ability to finance their college education" (Bean & Metzner, 1985, p. 502). Research pre-dating the Post-9/11 GI Bill era indicated benefit usage increased graduation rates and educational levels for veterans (Angrist, 1993; Bound & Turner, 2002). More recently, Sibson (2014) found that the use of benefits was statistically significant for student persistence in a public, two-year community college. No research literature was found that differentiated the

benefit usage by level of eligibility, which directly impacts the amount of aid received by the veteran. For this study, level of eligibility was operationalized as a dichotomous variable (0 = less than 100% eligibility; 1 = 100% eligibility).

As a VA entitlement, benefits under the Post-9/11 GI Bill are not considered Title IV funds, thus the amount of benefits received do not impact a student veteran's eligibility for federal financial aid (Mulhere, 2016). Molina and Morse (2015) recommended "[a] descriptive look at financial aid among military-connected undergraduates" to help "build a better understanding about the access, persistence, and completion patterns of these students" (p. 13). In community colleges, financial aid has been associated with higher rates of persistence (Goldrick-Rab, 2010), yet, to date, research including the use of financial aid as a predictor for completion or transfer of a community college student veteran has not been explored. For this study, use of financial aid was operationalized as a dichotomous variable (0 = No; 1 = Yes).

Dependent Variable

"Dropout" was the dependent outcome of the Bean and Metzner (1985) model of nontraditional student attrition and was defined as, "any student who enrolls at an institution one semester but does not enroll the next semester and has not completed his or her formally declared program of study" (p. 486). The adaptation of the model for this study converted the outcome label to "Success" and broadened the definition to include student success measures more appropriately aligned with the mission of community colleges (American Association of Community Colleges [AACC], 2012). The operational definition of the outcome variable, "Success", was any student veteran

enrolled at the community college, for the first-time, between Fall 2012 and 2013, who completed a certificate or an associate degree program by Fall 2016, or transferred to a four-year institution (Fall-to-Fall terms) during that timeframe. "Nonsuccessful" student veterans either voluntarily (e.g., withdrew or dropped) or involuntarily (e.g., failed) did not complete or transfer to a four-year institution. Institutional data was the source for certificate and degree attainment, while transfer data was garnered from the National Student Clearinghouse. The outcome was operationalized as a dichotomous dependent variable (0 = nonsuccess; 1 = success). A description of the type of variables and how each was operationalized in the study can be found in Table 3.1.

Table 3.1

Study Factors and Variables

Factors	Variables	Type	Coding
Background/Defining			
	Gender	Categorical	0 = Female 1 = Male
	Age	Continuous	At time of enrollment
	Race/Ethnicity	Categorical	1 = White, Non-Hispanic 2 = Black, Non-Hispanic 3 = Hispanic 5 = Other
	Initial Enrollment Status		0 = Part-time 1 = Full-time
Academic			
	1st Term Cumulative GPA	Continuous	1st Term Cumulative
Environmental			
	Level of Eligibility	Categorical	0 = < 100% 1 = 100%
	Use of Financial Aid	Categorical	0 = No 1 = Yes
Outcome			
	Success	Categorical	0 = Not Successful 1 = Successful

Data Analyses

Data was imported into IBM Statistical Package for the Social Sciences (SPSS) 23 for analysis. Only a small number of missing data (47) was found in the dataset; therefore, listwise deletion, removal of student records with missing data, was used prior to analysis. Descriptive analysis and inferential analyses, to include a binary logistic

regression, were conducted to answer the study's research questions. The findings of the binary logistic regression analysis led to an exploratory linear regression analysis.

Descriptive analysis was used to summarize and examine relationships among the measures and offer a reference point for any differences in the data. The descriptive statistics included means, standard deviations, frequencies, and percentages. All three blocks of variables in the study's framework (demographic and defining factors, academic factor, and environmental factors) were included in the descriptive analysis. Inferential statistics, to include independent measures *t*-tests and chi-square tests of independence, were conducted to interpret the outcomes for the two groups of student veterans, thus testing the hypotheses for research questions 1-3. As a nonexperimental, correlational study, the results were interpreted not as an affirmation of causal attributes, but rather as associations or contributions of the predictor variables to the outcome variable (Mertens, 2010). The predetermined level of significance was an alpha level of .05.

Independent Measures *t*-Tests

The continuous variables of age at enrollment and cumulative first-term GPA required the use of the independent measures *t*-test to compare differences in means between the student veterans who completed or transferred and those that did not. The use of the independent measures *t*-test required satisfying the following assumptions (Gravetter & Wallnau, 2013, p. 337):

1. The observations within each sample must be independent.
2. The two populations from which the samples are selected must be normal.

3. The population from which the samples are selected must have equal variances (homogeneity of variance).

The first assumption of independent observations was met in that the entire population of Post-9/11 student veterans was used and the measures for each student veteran was not influenced by the measures of other student veterans. For the second assumption, it was suspected that the data for the student veteran population would not be normally distributed, which is why a large population of student veterans was sought for the study. Gravetter and Wallnau (2013) indicate this strategy is an appropriate compensation and that violating the assumption of normal distribution does not impact the validity of the test. Most likely due to the large difference in the outcome sample sizes, the third assumption of homogeneity of variance was not met for the background/defining variable of age at enrollment. The violation of this assumption was recognized through examination of the Levene's Test of Homogeneity of Variance; therefore, the SPSS-adjusted output for the *t*-test results was used as a correction for interpreting the results.

Hubbard and Lindsay (2008) have called into question the use of *p* values, describing it as "an unobjective and inadequate measure of evidence when statistically testing hypotheses" (p. 69) and recommend using effect sizes and confidence intervals as more reliable measures of significance. Gravetter and Wallnau (2013) also note the flawed ability to reject a null hypothesis given a large enough sample size. In this study, *p* values were reported along with measures of effect size and confidence levels to allow for a more accurate interpretation of statistical significance.

The effect size of the *t*-test results was measured using Cohen's *d*. The calculation for this measurement divides the differences in means by the standard deviation, rather than the sample size. This standardizes the calculation of the effect size, which provides a more absolute measurement of the effect's magnitude (Gravetter & Wallnau, 2013).

Confidence interval estimations were also used to reveal significance. This study had an established alpha level of .05, which equates to a 95% confidence level interval for estimations. When testing the null hypothesis, the prediction was that there was no difference in means. If the 95% confidence interval did not encompass the zero value of the null hypothesis, then the null hypothesis was rejected with 95% confidence (Gravetter & Wallnau, 2013; Hubbard & Lindsay, 2008). The effect size results and the confidence level interval estimates were reported along with the results of the applicable hypothesis test found in Chapter 4.

Chi-Square Test for Independence

The chi-square test for independence is a nonparametric statistic that "is one of the most useful statistics for testing hypotheses when the variables are nominal" (McHugh, 2013, p. 143). Through the use of sample frequency data, a chi-square test for independence was conducted to evaluate the relationship between each categorical variable and the categorical, dependent variable of "success". To ensure accuracy in interpreting the results, the following assumptions of the chi-square test for independence had to be met (Gravetter & Wallnau, 2013; McHugh, 2013):

1. The cell data are expressed as frequencies.

2. The categories of the variables are mutually exclusive from each other.
3. Observations for each subject apply to only one cell within the chi square matrix.
4. The observations within each sample are independent.
5. The expected frequencies number 5 or more in a minimum of 80% of the cells and no cell has an expected frequency of 0.

The first assumption was met; counts, not percentages or scores were used to examine the relationship between the categorical variables. Data for each student veteran fit into only one category for each predictor variable, and each student veteran was categorized as either "successful" or "not successful"; therefore, the second and third assumptions were met. Due to the fact that the observations for each student veteran were not influenced by the measures of other student veterans, the fourth assumption was satisfied. In order to meet the fifth assumption, the Asian category within the race/ethnicity variable had to be collapsed into the Other category.

For all chi square tests of independence results, the effect size was measured in order to understand the strength of the association between the categorical variables and the dependent variable. Measurement of the effect size was accomplished using the Cramér's *V* test and interpreted using Cohen's (1988) recommended guidelines. The Cramér's *V* test results were reported along with the results of the applicable hypothesis test found in Chapter 4.

Binary Logistic Regression

For research question 5, a binary logistic regression was conducted to predict the likelihood of completing a certificate or degree or transferring to a four-year institution given the independent variables. This approach was appropriate, because the outcome variable of the model was dichotomous (0 = not successful, 1 = successful), and the study sought to determine the effect of each independent variable on the likelihood of the outcome (Hosmer, Lemeshow, & Sturdivant, 2013; Keith, 2014). In this form of regression, the independent variables must be dichotomous or continuous; therefore, the categorical independent variables in this study were dummy coded prior to input for analysis (Garson, 2016).

Binary logistic regression models the likelihood of the outcome in the form of an odds ratio—the probability of the event occurring divided by the probability of the event not occurring. This ratio is then transformed into a natural logarithm, referred to as the log odds. The coefficients (β) in the resulting model represent the odds ratios and indicate the direction and strength of the likelihood. A coefficient greater than 1 indicates an increased likelihood of the event occurring, while a coefficient less than 1 indicates an increased likelihood of the event not occurring (Keith, 2014).

The percentage of variance cannot be explained in a binary logistic regression model, yet the strength of the association of the predictor variables with the outcome variable can be interpreted through an effect size measure of the model. The Nagelkerke's pseudo R^2 was used to measure effect size. Garson (2016) categorizes the strength of the effect as weak (Nagelkerke pseudo $R^2 = 0$ to 0.3), moderate (Nagelkerke

pseudo R^2 = 0.3 - 0.6), and strong (Nagelkerke pseudo R^2 = 0.6 or more). The Nagelkerke pseudo R^2 value is reported along with the results of the binary logistic regression analysis found in Chapter 4.

The assumptions for a binary logistic regression model were taken into account for this study and appraised before or during analysis. These assumptions included (Field, 2009; Garson, 2016):

1. The dependent variable is dichotomous (two categories).
2. The categories are exclusive of each other.
3. Each case can only be in one category.
4. Any continuous independent variables are linearly related to the log odds of the dependent variable.
5. There is little or no multicollinearity in the data.

As previously discussed, the data for the study met the first three assumptions. Testing the fourth assumption required inclusion of interactions between the continuous variables and their log odds in the model. The natural log of age, at time of enrollment, and first-term cumulative GPA were computed in SPSS and then included in logistic regression analysis. The significance values for the interaction terms were greater than .05, thus the assumption of linearity was met (Field, 2009).

In reference to the fifth assumption, multicollinearity is the result of intercorrelations between one or more of the predictor (independent) variables. This can cause an increase in the model coefficients' variance, resulting in inaccurate coefficient estimates. The goal is for the variance to be decreased, which strengthens the

significance of the model (O'brien, 2007). When performing a binary logistic regression analysis, SPSS does not include a test for multicollinearity. However, Field (2009) recommends performing a linear regression analysis with the same outcome and predictor variables and selecting the optional collinearity diagnostics to obtain the variance inflation factors (VIFs) and tolerance values. A high VIF (above 10) means that the standard errors are inflated due to a high correlation between the independent variables. A VIF below 10 and a tolerance value above 0.2 were considered to satisfy the fourth assumption (O'brien, 2007). The VIF and tolerance values between the predictor variables and the outcome variable of success are reported in Table 3.2. The VIF values ranged from 1.047 to 1.127 and the tolerance values ranged from .887 to .955, demonstrating the assumption of little or no multicollinearity was met.

Table 3.2

Variance Inflation Factors (VIFs) and Tolerance Statistics between Predictor Variables and Success

Variable	VIF	Tolerance
Gender	1.053	.950
Age	1.068	.936
Black, Non-Hispanic	1.127	.887
Hispanic	1.095	.913
Other	1.076	.929
1st Term Cumulative GPA	1.078	.928
Initial Enrollment Status	1.069	.935
Level of Eligibility	1.047	.955
Use of Financial Aid	1.062	.942

The Hosmer-Lemeshow goodness of fit test was used to evaluate how well the model's estimates fit the data. The fit test's null hypothesis is that there is no difference

between the observed outcomes and the model's values. A test statistic greater than .05, fails to reject the null, thus implying an acceptable level of model fitness (Hosmer, Lemeshow, & Sturdivant, 2013). Additional interpretations of the binary logistic regression results were based upon an analysis of the Wald chi-square statistics, significance values, and odds ratios (Keith, 2014). The results of the binary logistic regression prompted an exploratory linear regression analysis.

Multiple Linear Regression

A linear regression analysis was conducted to further explore the academic outcome variable, first-term cumulative GPA. Specifically, a linear regression model was sought for the predicted value of first-term cumulative GPA given the independent variables of gender, age at time of enrollment, race/ethnicity, initial enrollment status, level of eligibility, and use of financial aid. Conducting a linear regression required satisfying the following assumptions (Field, 2009; Gravetter & Wallnau, 2013):

1. The relationship between the independent and dependent variables must be linear.
2. There is an independence of the errors—the residuals are uncorrelated.
3. There must be equal homoscedasticity.
4. There is little or no multicollinearity in the data.

The assumption of linearity was evaluated using a scatterplot of the standardized residuals and standardized predicted values. A visual inspection of the scatterplot indicated no obvious overall pattern to the residuals (Figure 3.1). The positive and negative residuals were relatively randomized. Because no curve pattern was present in the graph, linearity was assumed. The Durbin-Watson test was used to measure the

second assumption. The test statistic can range from 0 to 4; a value of 2 indicates no correlation between the residuals. Field (2009) recommends a violation of the assumption of independence of errors when the value is less than 1 or more than 3. The Durbin-Watson test statistic for the current study's linear regression was 1.862, satisfying the assumption.

Homoscedasticity, a normal distribution of errors, was assessed through visual inspection of the histogram and the normal probability plot (p-plot) (Figure 3.1). The histogram exposed a slight skew to the right, yet not a large deviation, and the p-plot displayed a general diagonal line. Homoscedasticity was further assumed, because the scatterplot did not demonstrate a funneling out pattern, which "is typical of heteroscedasticity and indicates increasing variance across the residuals" (Field, 2009, p. 247).

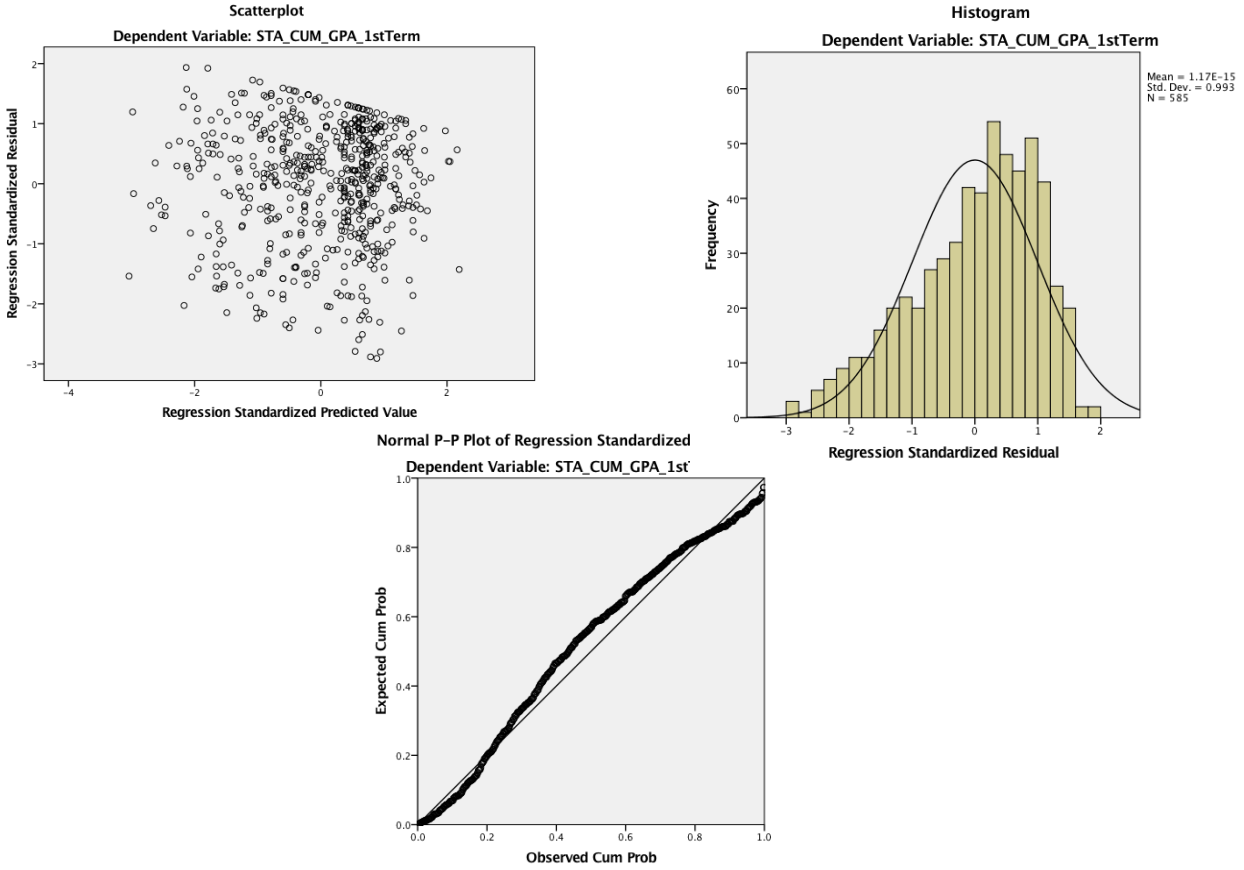

Figure 3.1. Graphs demonstrating the test results for the linear regression assumptions.

Multicollinearity was checked using the collinearity diagnostic statistics of VIFs and tolerance values. O'brien's (2007) guidelines for a VIF below 10 and a tolerance value above 0.2 were again used to determine whether the data satisfied the assumption. The VIF values ranged from 1.047 to 1.080 and the tolerance values ranged from .926 to .955, demonstrating the assumption of little or no multicollinearity was met (see Table 3.3).

Table 3.3

Variance Inflation Factors (VIFs) and Tolerance Statistics between Predictor Variables and 1st Term Cumulative GPA

Variable	VIF	Tolerance
Gender	1.051	.952
Age	1.057	.946
Black, Non-Hispanic	1.080	.926
Hispanic	1.075	.930
Other	1.058	.945
Initial Enrollment Status	1.060	.943
Level of Eligibility	1.047	.955
Use of Financial Aid	1.060	.943

The null and alternative hypothesis for the linear regression analysis were:

H_0: The regression equation does not account for a significant portion of variance in the student veteran's status of success.

H_1: The regression equation does account for a significant portion of variance in the student veteran's status of success.

Summary

This chapter reasserted the problem statement that spurred the study's focus on investigating the factors that influence student veterans' completion and transfer rates, while enrolled at a Texas community college. The overall purpose of the chapter was to outline the methodology that was be used to answer the research questions. The research design, site selection criteria, and data collection techniques were outlined. The study's variables, the rationale behind their selection, and how each was operationalized for analysis were discussed. An explanation of the strategies for analysis, to include assessing the assumptions of each, concluded the chapter.

Chapter 4: Findings

The Post-9/11 Veterans Educational Assistance Program (Post-9/11 GI Bill) broadened the educational opportunities for today's military members, veterans, and their dependents through a substantial increase in educational benefits (GAO, 2013a). Yet, the research literature on the educational attainment of this population, especially when narrowed to student veterans at community colleges, is exceptionally limited. The purpose of this study was to expand the research on Post-9/11 student veterans by exploring variables that may influence the degree/certificate completion or transfer of those attending a Texas community college. Institutional enrollment data from Fall 2012 through Fall 2013 and National Student Clearinghouse data from Fall 2012 through Fall 2016 were analyzed to identify any statistically significant differences in demographic, academic, or environmental factors between student veterans who completed a degree/certificate or transferred to a 4-year university and those who did not.

This chapter presents the findings from the study's analyses. The first section reports overall descriptive statistics of the community college's Post-9/11 student veteran population and then differentiates by those student veterans who were successful in earning a degree/certificate or transferring and those who were not. Subsequent sections examine each research question through more in-depth descriptive statistics, to include *t*-tests and chi-square tests of independence. The final research question is addressed through binary logistic regression analysis. Results from an additional inquiry, using multiple linear regression, are also presented. A summary of the findings concludes this chapter.

Population

The population for this study included all Post-9/11 student veterans enrolled in at least one course for the first-time at the community college between Fall 2012 through Fall 2013. Degree or certificate completion was assessed as of Fall 2016. Transfer status was tracked fall to fall and assessed any time during the timeframe. Identification of the student veteran population was accomplished through institutional data that verified use of Post-9/11 educational benefits and veteran status. Six hundred thirty-two Post-9/11 student veterans were enrolled between Fall 2012 and Fall 2013. Forty-seven records were missing cumulative first-term grade point averages, so these were excluded from the study's population. Thus, 585 student veterans were included in the study.

Table 4.1 offers a description of the study's population by background/defining variables, academic outcome variable, environmental variables, and the dependent variable. The background/defining variables included gender, age, race/ethnicity, and enrollment status. Of the 585 student veterans enrolled from Fall 2012 to Fall 2013, 82.9% (n = 485) were male and 17.1% (n = 100) were female. The population's mean age was 28.15 years old with a standard deviation of 6.48 years. Their age ranged from 19 – 60 years old.

Over half of the population, 58.3% (n = 341) was White, non-Hispanic. Hispanic student veterans represented 23.2% (n = 136) of the population, while 9.4% of the population was Black, non-Hispanic (n = 55). The percentage of Asian students was low at 3.08% (n = 18), as was the initial "Other" category of students (5.98%, n= 35). Such small numbers would have limited the use of some of the planned analyses, so the Asian

student veteran group was combined with the initial "Other" category of student veterans. This yielded an "Other" group that consisted of 53 student veterans (9.1%).

The population's initial enrollment status included 71.5% (418) full-time enrollees and 28.5% (167) part-time enrollees. The study's academic variable was first-term cumulative grade point average (GPA). The population's mean first-term cumulative GPA was 2.65 with a standard deviation of 0.97. This variable ranged from a GPA of 0.13 (n= 2) to 4.00 (n= 33). For level of benefit eligibility, 91.1% (n= 533) of the student veterans were eligible for 100%, and 8.9% (n= 52) had less than 100% eligibility.

For this population of student veterans, 40.0% (n= 234) used some form of financial aid; 60.0% (n= 351) did not. Approximately 13% (n= 79) were successful in earning a degree or certification or transferring to a 4-year university, while 86.5% (n= 506) were not. The distribution of the variables by "successful" and "not successful" can be found in Table 4.2 and are described in the subsequent subsections. Success was defined as earning a degree/certificate or transferring to a 4-year university between Fall 2012 and Fall 2016.

Table 4.1

Descriptive Statistics of Study Population (N= 585)

Variable	Mean or Percent	Standard Deviation
Demographic/Defining		
Gender		
Male	82.9%	
Female	17.1%	
Age (Years)	28.15	6.48
Race/Ethnicity		
Black, Non-Hispanic	9.4%	
Hispanic	23.2%	
White, Non-Hispanic	58.3%	
Other	9.1%	
Enrollment Status		
Full-Time	71.5%	
Part-Time	28.5%	
Academic		
First-Term Cumulative GPA	2.65	0.97
Environmental		
Level of Eligibility		
100%	91.1%	
<100%	8.9%	
Other Financial Aid		
Yes	40.0%	
No	60.0%	
Outcome		
Successful		
Yes	13.5%	
No	86.5%	

Successful Student Veterans

Of the 79 student veterans who graduated from the community college with a degree or certification or transferred to a 4-year university, 87.3% (n= 69) were males and 12.7% (n= 10) were females. The mean age of the successful student veterans was 26.87 years old with a standard deviation of 5.06 years. These student veterans ranged in age from 21 to 44 years old. Their race/ethnicity composition was 6.3% Black, Non-Hispanic (n= 5), 24.1% Hispanic (n= 19), 62.0% White (n= 49), and 7.6% Other (n= 6). The successful student veterans' enrollment status included 75.9% (n= 60) full-time enrollees and 24.1% (n= 19) part-time enrollees. Their mean first-term cumulative GPA was 2.92 with a standard deviation of .893. This variable ranged from a GPA of .13 to 4.00. Approximately 90% (n= 71) of the student veterans were eligible for 100% of the Post-9/11 GI Bill benefits, while 10.1% (n= 8) had eligibilities below 100%. Thirty-eight percent (n= 30) received some form of additional financial aid, while 62% (n= 49) did not.

Roughly 25% (n= 20) of the successful student veterans completed an associate degree. Ten of these student veterans earned an Associate of Applied Science, four earned an Associate of Arts, and six earned an Associate of Science. The mean cumulative credit hours for completion of a degree were 92.76 with a standard deviation of 18 credit hours. Approximately 6% of the successful student veterans (n= 5) earned certificates. At slightly more than 63% (n= 54), the largest majority of the successful student veterans were transfer-out students.

Non-Successful Student Veterans

Of the 506 student veterans who did not graduate or transfer from the community college 82.2% (n= 416) were males and 17.8% (n= 90) were females. The mean age of the students was 28.34 years old with a standard deviation of 6.66 years. Their age ranged from 19 - 60 years old. The race/ethnicity composition of the students was 9.9% Black, Non-Hispanic (n= 50), 23.1% Hispanic (n= 117), 57.7% White, Non-Hispanic (n= 292), and 9.3% Other (n= 47). The students' initial enrollment status included 70.8% (n= 358) full-time enrollees and 29.2% (n= 148) part-time enrollees. Their mean first-term cumulative GPA was 2.61 with a standard deviation of 0.98. This variable ranged from a GPA of 0.13 to 4.00. Of these students, 91.3% (n= 503) were eligible for 100% of the Post-9/11 GI Bill benefits, while 8.7% (n= 44) had eligibilities below 100%. Approximately 40% (n= 204) received some form of financial aid, while 59.7% (n= 302) did not.

Table 4.2

Descriptive Statistics for Variables Used in Analyses by Outcome Status (N = 585)

Variable	Mean or Percent (SD)	
	Successful (n = 79)	Non-Successful (n = 506)
Demographic/Defining		
Gender		
Male	87.3%	82.2%
Female	12.7%	17.8%
Age (Years)	26.87 (5.06)	28.34 (6.66)
Race/Ethnicity		
Black, Non-Hispanic	6.3%	9.9%
Hispanic	24.1%	23.1%
White, Non-Hispanic	62.0%	57.7%
Other	7.6%	9.3%
Enrollment Status		
Full-Time	75.9%	70.8%
Part-Time	24.1%	29.2%
Academic		
First-Term Cumulative GPA	2.92 (.893)	2.61 (0.98)
Environmental		
Level of Eligibility		
100%	89.9%	91.3%
<100%	10.1%	8.7%
Other Financial Aid		
Yes	38.0%	40.3%
No	62.0%	59.7%

Background/Defining Factors

The first research question of the study pertained to whether there was a significant difference in background/defining factors between Post-9/11 student veterans, enrolled at a Texas community college, who successfully completed a degree/certificate or transferred to a 4-year university. The background/defining factors included: gender, age, race/ethnicity, and initial enrollment status. Due to the exploratory nature of the

study, null hypotheses were used, predicting no significant differences would be found. An alpha level of .05 or less was the predetermined level of significance for all analyses.

Gender

A chi-square test of independence was used to examine the relationship between gender and the successful completion of a degree/certificate or transfer. The independent and dependent variables were categorical and consisted of two or more independent groups (males and females; successful and not successful). The data met the assumptions for using the chi-square test. The results of the chi square test, found in Table 4.3, indicated that a student veteran's gender does not appear to be associated with the outcome variable; the results showed no statistically significant difference between males and females in the completion of a degree or certification or transferring to a four-year institution, $\chi^2 = 1.27$, $p = .260$, $V = .047$. These results suggest that the outcome of success is similar for male and female student veterans enrolled at this community college; therefore, the null hypothesis was not rejected.

Table 4.3

Results of Chi-Square Test and Descriptive Statistics for Outcome Status by Gender

	Gender	
Outcome Status	Male	Female
Successful	69 (14.23%)	10 (10.00%)
Not Successful	416 (85.77%)	90 (90.00%)

Note. χ^2 (1, N = 585) = 1.267, p = .260. Numbers in parentheses indicate column percentages.

Age

An independent samples *t*-test was conducted to compare the differences in mean age, a continuous variable, between the two groups of student veterans. As assessed by the Levene's Test for Equality of Variances, equal variance of the two groups was not assumed. This is likely due to the difference in sample size. The SPSS-adjusted output for the *t*-test was used to interpret the results. The *t*-test results, as found in Table 4.4, indicated a statistically significant difference in mean age between student veterans who completed a degree or certificate or transferred (M = 26.87, SD = 5.06) and those who did not (M = 28.34, SD = 6.66), t (583)= -2.29, p = .024, two-tailed, d = -0.25, 95% CI [-2.74, -.201]. The confidence interval estimates supported the significance finding, and the Cohen's d value suggested the strength of the association was small (d = -0.25). The null hypothesis was rejected.

Table 4.4

Results of the t-Test and Descriptive Statistics for Outcome Status by Mean Age

				95% Confidence Interval	
	N	*M*	*SD*	Lower	Upper
Successful	79	26.87	5.06		
				-2.74	-.201
Not Successful	506	28.34	6.66		

Note. t (583) = -2.29, p = .024

Race/Ethnicity

A second chi-square test of independence was performed to analyze the association between race/ethnicity and successful completion or transfer. The data assumptions and the sample size restriction were met. The results of the test, found in Table 4.5, indicated that there was no statistically significant association between race/ethnicity and successfully completing a degree/certificate or transferring, $\chi^2 = 1.38$, $p = .711$, $V = .049$. These results suggest that the outcome of success is similar for all race/ethnicity categories of student veterans enrolled at this community college; therefore, the null hypothesis was not rejected.

Table 4.5

Results of Chi-Square Test and Descriptive Statistics for Outcome Status by Race/Ethnicity

	Race/Ethnicity			
Outcome Status	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	Other
Successful	49 (14.37%)	5 (9.09%)	19 (13.97%)	6 (11.32%)
Not Successful	292 (85.63%)	50 (90.91%)	117 (86.03%)	47 (88.68%)

Note. χ^2 (3, N = 585) = 1.38, p = 0.711. Numbers in parentheses indicate column percentages.

Initial Enrollment Status

To analyze the relationship between the student's initial enrollment status and completion or transfer, a third chi-square test of independence was conducted. The data met the assumptions of the test, as well as the expected frequency size of each cell. The results of the test, found in Table 4.6, indicated no statistically significant association

between initial enrollment status and degree completion, $\chi^2 = 0.905$, p = .341, V = .039. These results suggest that the outcome of success is similar for student veterans enrolled full-time or part-time at this community college; therefore, the null hypothesis was not rejected.

Table 4.6

Results of Chi-Square Test and Descriptive Statistics for Outcome Status by Enrollment Status

	Enrollment Status	
Outcome Status	Full-Time	Part-Time
Successful	60 (14.35%)	19 (11.38%)
Not Successful	358 (85.65%)	148 (88.62%)

Note. χ^2 (1, N = 585) = 0.905, p = .341. Numbers in parentheses indicate column percentages.

Academic Factor

The second research question of the study concerned whether there was a significant difference in the academic factor, first-term cumulative GPA between Post-9/11 student veterans who completed a degree/certificate or transferred and those who did not. Again, due to the exploratory nature of the study, a null hypothesis was used, predicting no significant difference would be found. An alpha level of .05 or less was the predetermined level of significance.

First-Term Cumulative GPA

As a continuous variable, first-term cumulative GPA was analyzed using an independent samples *t*-test to compare the differences in mean GPA between those student veterans who completed or transferred and those that did not. As assessed by the

Levene's Test for Equality of Variances, equal variance of the two groups was assumed. The results, as found in Table 4.7, indicated a statistically significant difference in mean first-term cumulative GPA between student veterans who completed a degree or certificate or transferred (M = 2.92, SD = 0.89) and those who did not (M = 2.61, SD = 0.98), t (583) = 2.63, p = .009, two-tailed, d = 0.33, 95% CI [0.078, 0.539]. The confidence interval estimates confirmed the significance finding, and the Cohen's d value suggested the strength of the association was between a small to medium effect (d = -0.33). The null hypothesis was rejected.

Table 4.7

Results of the t-Test and Descriptive Statistics for Outcome Status by Mean GPA

				95% Confidence Interval	
	N	*M*	*SD*	Lower	Upper
Successful	79	2.92	0.89	0.078	0.539
Not Successful	506	2.61	0.98		

Note. t (583) = 2.63, p = .009

Environmental Factors

The third research question of the study asked whether there was a significant difference in environmental factors between Post-9/11 student veterans who completed a degree or certificate or transferred and those who did not. The environmental factors included: level of eligibility and use of financial aid. Null hypotheses were used, predicting no significant differences would be found. An alpha level of .05 or less was the predetermined level of significance for all analyses.

Level of Eligibility

A chi-square test of independence was conducted to examine the relationship between the level of Post-9/11 GI Bill benefits and successful completion or transfer. The data met both assumptions and sample size restrictions for each cell. The results of the test are outlined in Table 4.8. The results suggested there was no statistically significant association between level of benefit eligibility and successfully completing a degree/certificate or transferring, $\chi^2 = 0.173$, p = .678, V = .017. These results suggest that at this community college, the outcome of success is similar for student veterans of either eligibility category; therefore, the null hypothesis was not rejected.

Table 4.8

Results of Chi-Square Test and Descriptive Statistics for Outcome Status by Level of Eligibility

	Level of Eligibility	
Outcome Status	100%	<100%
Successful	71 (13.32%)	8 (15.38%)
Not Successful	462 (86.68%)	44 (84.62%)

Note. χ^2 (1, N = 585) = 0.173, p = .678. Numbers in parentheses indicate column percentages.

Use of Financial Aid

A second chi-square test of independence was performed to assess whether there was an association between the use of any form of financial aid and a student veteran's completion or transfer rate. The data met both assumptions of the test, as well as the expected frequency size of each cell. The results of the test are outlined in Table 4.9.

The analysis indicated no statistically significant association between the use of financial aid and successfully completing a degree or certification, or transferring, $\chi^2 = .156$, $p = .693$, $V = 0.16$. These results suggest that, at this community college, the outcome of success is similar for student veterans receiving financial aid and those who do not; therefore, the null hypothesis was not rejected.

Table 4.9

Results of Chi-Square Test and Descriptive Statistics for Outcome Status by Use of Financial Aid

	Use of Financial Aid	
Outcome Status	Yes	No
Successful	30 (12.82%)	49 (13.96%)
Not Successful	204 (87.18%)	302 (86.04%)

Note. χ^2 (1, N = 585) = 0.156, p = .693. Numbers in parentheses indicate column percentages.

Predicting Success

The final research question pertained to examining the factors that best predict completion of a degree/certificate or transfer to a 4-year institution by Post-9/11 student veterans enrolled at a Texas community college. There were potentially seven variables (gender, age, race, enrollment status, first-term cumulative GPA, level of eligibility, and use of other financial aid) to be used in the analysis. The preliminary analyses, using independent samples *t*-tests and chi-square tests of independence, revealed two statistically significant variables to be used in the binary logistic regression analysis.

The binary logistic regression was conducted to predict successfully completing a degree/certificate or transferring to a 4-year university for 585 student veterans using age,

at time of enrollment, and first-term cumulative GPA as predictors. Table 4.10 outlines the results of the logistic regression analysis. A test of the full model against a constant only model was statistically significant, indicating the predictors reliably distinguished between those student veterans who were successful and those that were not ($\chi^2 = 12.117$, $p = .002$, $df = 2$).

Nagelkerke's R^2 was .037, suggesting a weak effect size for the whole model (Garson, 2016). Prediction success of the model was 86.5%. The Wald criteria indicated the predictor age was statistically significant ($p = .042$) and the first-term cumulative GPA was statistically significant ($p = .006$). The coefficients suggested that age had a negative and statistically significant effect on the odds of being successful and that first-term cumulative GPA had a positive and statistically significant effect on the odds of being successful. A one-point increase in age would result in an approximate 5% decrease in the odds of completing a certificate or degree or transferring to a four-year institution. Conversely, a one-point increase in first-term cumulative GPA would result in an approximate 47% increase in the odds of completing a certificate or degree or transferring to a four-year institution. The Hosmer and Lemeshow goodness of fit test suggested the model was a good fit, $p = .587$.

Table 4.10

Logistic Regression Results for Completion or Transfer (N = 585)

	Odds ratio	S.E.	Wald	Sig.	95% Confidence Interval	
					Lower	Upper
Age	.954	.023	4.146	.042	.912	.998
1st Term Cumulative GPA	1.469	.141	7.461	.006	1.115	1.937

Note. Nagelkerke's pseudo R^2 = .037

Exploring First-Term Cumulative GPA

Due to the significance found in the chi-square test of independence, the results of the logistic regression model, and the role college GPA plays in the Bean and Metzner (1985) model for nontraditional student attrition, an exploratory multiple linear regression analysis was conducted to study the relationships between the continuous variable of first-term cumulative GPA and the predictor variables of gender, age at time of enrollment, race/ethnicity, initial enrollment status, level of eligibility, and use of financial aid. One consideration for this type of analysis is that the independent and dependent variables are numerical (Gravetter & Wallnau, 2013); therefore, the categorical variables were dummy coded prior to input into the model. As described in Chapter 3, the data assumptions for use of this statistical method were met. Table 4.11 summarizes the analysis results.

The results of the multiple regression model indicated the predictors explained 7.2% of the variance, $R^2 = 0.072$, $F(8, 576) = 5.596$ $p = .000$. It was found that the

predictor variables of Age (β = .100, p = .016); the race/ethnicity variable categories of Black, Non-Hispanic (β = -.209, p = .000), Hispanic (β = -.138, p = .001) and Other (β = -.129, p = .002); and Initial Enrollment Status (β = .090, p = .029) significantly predicted GPA, while Gender (β = -.040, p = .337); Level of Eligibility (β = -.012, p = .769); and Use of Financial Aid (β = .040, p = .338) did not contribute to the multiple regression model.

Table 4.11

Multiple Linear Regression Results for First-Term Cumulative GPA (N = 585)

Variable	B	SE(B)	β	*t*	Sig. (*p*)
Constant	2.353	.252		9.343	.000
Gender	-.102	.106	-.040	-.961	.337
Age	.015	.006	.100	2.413	.016
Black, Non-Hispanic	-.699	.139	-.209	-5.020	.000
Hispanic	-.318	.096	-.138	-3.317	.001
Other	-.532	.170	-.129	-3.135	.002
Initial Enrollment Status	.195	.089	.090	2.182	.029
Level of Eligibility	-.041	.141	-.012	-.294	.769
Use of Financial Aid	.079	.082	.040	.959	.338

Note. $R^2 = .072$

The null hypothesis was rejected, the regression model accounted for a small, yet statistically significant portion of variance in the student veteran's status of success.

Summary

This chapter outlined the results of the study's analyses. It began with overall description of the Post-9/11 student veterans enrolled at the Texas community college and then focused on each group, those student veterans that were successful at completing a degree/certification or transferring to a 4-year university and those who were not. Baseline statistics included frequencies, percentages, means, and standard deviations for applicable variables. Subsequent sections were organized by research question and presented the findings from the *t*-tests and chi-square tests of independence, cumulating with the results of the binary logistic regression. Age at time of enrollment and first-term cumulative GPA were the two variables found to be statistically significant in the preliminary analyses. The logistic regression model suggested there was a 5% less likelihood for older student veterans to be successful at completing or transferring. In addition, for every point increase in GPA, a student veteran would be 1.6 times more likely to successful. The results of the full multiple linear regression model indicated five predictor variables were statistically significant: Age ($\beta = .100$, $p = .016$); the race/ethnicity variable categories of Black, Non-Hispanic ($\beta = -.209$, $p = .000$), Hispanic ($\beta = -.138$, $p = .001$) and Other ($\beta = -.129$, $p = .002$); and Initial Enrollment Status ($\beta = .090$, $p = .029$).

Chapter 5: Summary, Discussion, and Recommendations

By 2020, the Post-9/11 veteran population is expected to reach five million (GAO, 2013b). Higher educational attainment, although not the only path, can play a significant role in a veteran's successful transition to civilian employment. Within the next few years, approximately two million active duty military members will embark on this transition, and many will choose to begin with additional education (Evans, Pellergrino, & Hoggan, 2015). Historically, this pathway has been financially eased for veterans through the educational assistance they have earned by virtue of their military service.

The Servicemen's Readjustment Act of 1944 was the first comprehensive piece of legislation that addressed education and training for servicemembers. It was the result of strategic planning by the American Legion and eventual support by President Roosevelt to address the shortfalls in veterans' benefits that had led to the economic and political unrest following World War I. The underlying federal policy expectation of the GI Bill is that educational benefits will assist veterans in earning postsecondary training and education for the purpose of gaining access to the civilian workforce (Johnson, 2009; Olson, 1975). The structure and generosity of these benefits have fluctuated with the subsequent GI Bills; however, the most recent Post-9/11 GI Bill is reminiscent of the comprehensiveness of the initial legislation and has "the highest total obligations compared to the other GI Bills" (Dortch, 2014, p. 2).

The Post-9/11 Veterans Educational Assistance Act was enacted in 2009. Under this act, active duty and honorably-discharged veterans of all five services, to include

reserve personnel and commissioned officers of the National Oceanic and Atmospheric Association and Public Health Service are eligible for benefits if they served at least 90 days on aggregate active duty service after September 10, 2001. Servicemembers who experienced a service-connected disability must have served 30 days following the same date to be eligible for benefits. Unique to this GI bill is the provision allowing servicemembers to transfer educational benefits to their dependents. The member's eligibility percentage is based upon time served and, along with type of education and training program, location of school, and level of enrollment, determines the amount of benefits received (Veterans Benefits Administration [VBA], 2012).

For academic year 2016, maximum benefits for veterans include full in-state tuition and fees at a public college or university and $21,970.46 for the year at a private institution. The veteran may receive a stipend up to $1,000 for books and supplies and a monthly housing allowance. Veterans, relocating from a highly rural area to attend a higher education institution may be eligible to receive a one-time allowance of $500. The U.S. Department of Veterans Affairs (VA) pays tuition and fees directly to the institution, while the veteran receives the other benefits directly (VA, 2016).

Before enactment, the VA estimated the cost of Post-9/11 GI Bill benefits to be $64.9 billion by 2019 (Hearing on Pending Benefits Legislation, 2008). However, by 2014, just five years after enactment, approximately $55 billion was issued in educational benefits. At a now-projected cost of $11 to $12 billion per year (McCann, 2014; Zoli, Maury, & Fay, 2015), actual costs will certainly surpass initial estimates. This

considerable level of federal investment has spurred an increasing call for institutional accountability that has resulted in legislative actions.

President Obama's Executive Order No. 13607, Establishing Principles of Excellence (2012), required specific military-friendly policies and practices, as well as consumer disclosure mandates for any institution receiving VA payments. It also directed the Departments of Defense, Education, and Veterans Affairs to collaborate in the development of a tool that would better inform military members and veterans on the affordability and quality standards of their postsecondary options. The results were the codification of the Principles of Excellence that institutions can voluntarily commit to and the web-based GI Bill® Comparison Tool (VA, n.d.b.).

Through the passage of Public Law 112-249, Improving Transparency of Education Opportunities for Veterans (2012), the VA was directed to draft a comprehensive policy to improve outreach and transparency to veterans and servicemembers concerning institutional accreditation information. In August 2013, the Departments of Education and Veteran Affairs encouraged institutions to affirm their support of veterans through a commitment to the 8 Keys to Veterans' Success—a list of best practices to assure veterans succeed in higher education (VA, 2013). More recently, the Jeff Miller and Richard Blumenthal Veterans Health Care and Benefits Improvements Act (2016) mandated the Secretary of Veterans Affairs to collect educational outcomes data on all Post-9/11 student veterans. Such data have been elusive to date; however, institutions that do collect this data vary in the methodology they employ to gather and report such metrics (Servicemembers Opportunity College [SOC], 2012).

Research has found student veterans share many of the same risk factors associated with nontraditional students (Lang & Powers, 2011; Molina & Morse, 2015; Queen & Lewis, 2014). In addition, veterans choose to enroll at public institutions (Cate, 2014) and opt for community colleges at a higher rate than any other type of institution (Radford, 2011). If they use their educational benefits, they are more likely to be enrolled full-time (VA, 2015) and to persist (Sibson, 2014). Engagement surveys found that veterans prefer engaging academically, rather than socially while in school (Kim & Cole, 2013), and the wealth of qualitative research and literature has portrayed the challenges veterans face when they make the transition from the military to civilian academic setting (Ackerman, DiRamio, & Garza Mitchell, 2009; Evans, Pellegrino, & Hoggan, 2015; Falkey, 2014; Persky & Oliver, 2010; Rumman, Rivera, & Hernandez, 2011). Institutions have responded by implementing programs and services aimed at supporting veterans; however, it is unclear how these services mitigate these challenges or how well these services promote and facilitate a veteran's academic success. In fact, until recently, there has been very little research on the educational attainment of Post-9/11 student veterans. While the Student Veterans of America research (Cate, 2014; Cate, Lyon, Schmeling, & Bogue, 2017) begins to clarify the national data related to student veterans, there are still clear gaps in state-level and sector-specific on the educational attainment of student veterans.

These gaps in the literature spurred my interest in exploring variables associated with Post-9/11 student veterans' success at a community college. This chapter summarizes the study, outlining the research questions, hypotheses, and methods, and

then discussing the results in relationship to the research literature. Limitations of the study, as well as its significance are also presented. Finally, the study's implications for policy and practice and suggested areas for future research are shared.

Summary of the Study

This quantitative study sought to investigate the variables that may influence completion of an associate degree or certificate or transfer to a four-year university among Post-9/11 student veterans enrolled at a single Texas community college. I chose to conduct this study in Texas because it is home to more than 1.6 million veterans (VBA, 2016), is the fifth highest degree granting state for student veterans (VA, 2015), and is only surpassed by California in the number of processed benefit claims for the Post-9/11 GI Bill (VBA, 2016). I chose this specific community college because it participates in the Principles of Excellence program and is an 8 Keys to Veterans' Success site. It also has a VetSuccess on location and reports a large number of GI Bill students on the GI Bill® Comparison Tool. This section outlines the study, beginning with an overview of the research questions and hypotheses, then a summary of the study's methodology. A discussion of the study's findings and of the usefulness of the conceptual framework finalizes this section.

Research Questions and Hypotheses

The prevalence of student veterans to have nontraditional student characteristics (Lang & Powers, 2011; Molina & Morse, 2015; Molina, 2015a; Queen & Lewis, 2014) led to the use of an adaptation of the Bean and Metzner (1985) conceptual model for nontraditional students to guide this study. The independent variables were limited to

those available through institutional and National Student Clearinghouse data and that were supported for use by the current literature. Additional variables were included for exploratory purposes.

The four sets of variables in the adapted model framed the research questions. The background/defining variables consisted of gender, age, race/ethnicity, and enrollment status. First-term cumulative GPA represented the academic factor. The environmental factors included the level of GI Bill eligibility and the use of additional financial aid. The dependent variable was defined as completing an associate's degree, or certificate, or transferring to a four-year institution and was labeled as "success" in the study's analyses. Following are the research questions and hypotheses:

RQ1: Is there a significant difference in background/defining factors between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not?

H_0: There are no significant differences in background/defining factors between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not.

RQ2: Is there a significant difference in the academic factor between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not?

H_0: There is no significant difference in the academic factor between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not.

RQ3: Is there a significant difference in environmental factors between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not?

H_0: There is no significant difference in environmental factors between student veterans, enrolled at a Texas community college, who complete a degree/certificate or transfer to a four-year institution and those who do not.

RQ4: What factors best predict student veterans, enrolled at a Texas community college, success in completing a degree/certificate or transferring to a four-year institution?

H_0: No factors are predictive of a student veteran's completion of a degree/certificate or transfer to a four-year institution.

Methodology

Institutional data and National Student Clearinghouse data were consolidated for use in this study. The independent variables and the degree/certificate completion outcome measure were represented in the institutional data, while transfer-out data were verified in the National Student Clearinghouse data. The study's population included 585 student veterans enrolling for the first time at the community college between Fall 2012 and Fall 2013. They were enrolled in at least one course and were using their Post-9/11 GI Bill benefits. The dependent variable of degree or certificate completion, or transfer to a four-year institution was assessed as of Fall 2016 and was operationalized as a dichotomous "success" variable.

Descriptive statistics were conducted for all the independent variables and the dependent variable to summarize the population's data by means, standard deviations,

frequencies, and percentages. Chi-square and *t*-tests were calculated for the relevant characteristics found in research questions 1 - 3. For example, age and first-term GPA were continuous variables, thus *t*-tests were performed to compare differences in means between the student veterans who were successful and those who were not. The remaining variables were categorical in nature, dictating the use of chi-square tests to explore their relationships with the outcome variable of "success". The predetermined level of significance for all analyses was an alpha level of .05. Given that the outcome variable was measured dichotomously, research question 4 was analyzed using a binary logistic regression (Hosmer, Lemeshow, & Sturdivant, 2013). Findings from the binary logistic regression prompted exploratory analyses using a linear regression model.

Discussion of the Research Findings

Of the 585 Post-9/11 student veterans enrolled between Fall 2012 and Fall 2013, the majority of the population was White, non-Hispanic (58.3%) and male (82.9%), with an average age of 28.2 years old. Slightly less than 10% (9.4%) were Black, non-Hispanic, 23.2% were Hispanic, and the remaining 9.1% were classified as "Other." The majority of the population was enrolled full-time (71.5%), and their first-term cumulative GPA was 2.65 with a standard deviation of 0.97. Just over 91% (91.1%) had a GI Bill eligibility level of 100%, and only 40.0% used any other form of financial aid. Percentages of student veterans by gender, enrollment status, and use of financial aid were similar to the national representative data of student veterans complied by Molina and Morse (2015); however, race/ethnicity does vary. At the national level, Hispanic student veterans represent 14%, whereas, in the current study, they made up 23.1% of the

population. This finding is not surprising given Hispanic student represent 34.7% of higher education enrollment in Texas (Texas Higher Education Coordinating Board [THECB], 2016). Comparative data for the variables of GI Bill eligibility and first-term cumulative GPA for student veterans at a community college are not available.

An overwhelming percentage (86.5%), of the student veterans were not successful in earning a certificate or associate degree or transferring to a four-year institution. Of the 13.5% that were successful, 4.3% graduated with a certificate or an associate degree, and 9.2% transferred to a four-year institution. This level of success is dramatically below the 53.6% post-secondary completion rate reported in the recent National Veteran Education Success Tracker (NVEST) report. However, it is important to note that the methodologies are quite different. The NVEST study included some active duty (if veterans began using their Post-9/11 GI Bill benefits while active duty) and, more importantly, assessed outcomes after six years of initial benefit use (Cate, et al., 2017).

Alschuler and Yarab (2016) reported a similar graduation rate (50.1%) to the NVEST report; however, the study was conducted at a 4-year research university and combined military students, student veterans, and Montgomery GI Bill and Post-9/11 GI Bill users. No studies were found in the literature research that precisely defined the population as Post-9/11 GI Bill student veterans, were sector-specific to a community college, and measured completion or transfer, thus a comparative view is not possible. However, a general comparison with Texas higher education data can give more context.

Using Fall 2011 cohort data, the Texas Higher Education Coordinating Board (THECB) reported 3.9% of full-time students at 2-year institutions complete a certificate

in three years; 11.0% complete in 4 years. For associate degrees, 4.3% of full-time students graduate in 3 years, while 14.9% graduate in 4 years (THECB, 2016). Though the data parameters differ, this study's student veterans' completion rate is below Texas averages.

The institutional data for this study included cumulative semester hour credits. For exploratory purposes, I calculated the mean and standard deviation for the group of student veterans who completed an associate degree (n = 25). The mean amount was nearly 93 credit hours (92.76) with a standard deviation of 18. While this number is similar to the 98 average credits accumulated to degree for Texas full-time students in community colleges (Complete College America, 2011), both are strikingly above the 60 credits needed for completion of an associate's degree. For Post-9/11 student veterans, who need to maximize their benefits within a set timeframe, a clear academic plan is essential. I should note; however, that these hours could be representative of academic hours taken while the member was in the military and while using other education benefits, such as Tuition Assistance through the Department of Defense. Future research, at the student record level, could track the longitudinal use of different federal education benefits and whether patterns of "swirling" (Adelman, 2006; de los Santos & Sutton, 2012; Townsend, 2001) exist while in the military and/or out of the military and if these patterns attribute to excess credit accumulation (Zeidenberg, 2012).

Research questions 1 – 3. Findings from the t-tests and chi-square tests, conducted for research questions 1 – 3, revealed two significant differences between student veterans who were successful and those who were not. Age at time of enrollment

was statistically associated with student veterans who earned a certificate or an associate degree or transferred to a four-year institution than those who did not, t (583) = -2.29, p = .024. In addition, first-term GPA was statistically related to student veterans who earned a certificate or an associate degree, or transferred to a four- year institution, t (583) = 2.63, p = .009. Table 5.1 outlines the results for each.

Table 5.1

t-test Results for Age and First-Term Cumulative GPA

				95% Confidence Interval	
	N	*M*	*SD*	Lower	Upper
Age					
Successful	79	26.87	5.06		
				-2.74	-.201
Not Successful	506	28.34	6.66		
GPA					
Successful	79	2.92	0.89		
				0.783	0.539
Not Successful	553	2.61	0.98		

Note. t (583) = -2.29, p = .024; t (583) = 2.63, p = .009

I was surprised not to find an association between level of eligibility or use of additional financial aid and success. Qualitative and descriptive survey reports have documented student veterans' financial concerns related to their educational pursuits (DiRamio, Ackerman, & Garza Mitchell, 2008; Zoli, Maury, & Fay, 2015). While level of eligibility has not been used as a variable in any quantitative research of student veterans to date, research in persistence and graduation rates, in general, has shown a positive relationship to financial aid (The Pell Institute, 2004). The percentage of student veterans utilizing other forms of financial aid and the categorical levels of Post-9/11 GI

Bill eligibility were almost equal between the "successful" and "not successful" group. This suggests other reasons for stopping out from higher education.

Research question 4. The logistic regression analysis investigated whether age, at time of enrollment, and first-term cumulative GPA influenced a student veteran's completion of a certificate or associate's degree or transfer to a four-year institution. Table 5.2 presents the standard errors, Wald criteria, significance values, and odds ratios. The test of the full model indicated the predictors reliably distinguished between those student veterans who were successful and those who were not. The overall model was found to be statistically significant, ($\chi 2 = 12.117$, $p = .002$, $df = 2$) and correctly predicted 87.5% of the population's outcome. The Wald criteria indicated both predictors were statistically significant.

Table 5.2

Logistic Regression Results for Completion or Transfer (N = 585)

					95% Confidence Interval	
	Odds ratio	S.E.	Wald	Sig.	Lower	Upper
Age	.954	.023	4.146	.042	.912	.998
1st Term Cumulative GPA	1.469	.141	7.461	.006	1.115	1.937

Note. Nagelkerke's pseudo $R^2 = .037$

Nagelkerke's R^2 was .037, indicating a relatively weak association between the model's variables. The Wald criteria demonstrated both predictors were statistically significant, with age at $p = .042$ and first-term cumulative GPA at $p = .006$. An investigation of the direction of the odds ratios revealed that as student veterans' age

increased by one year from the average, they were 5% less likely to successfully complete or transfer (OR = .95) and with every one point increase in first-term GPA the student veteran would be approximately 1.5 times more likely to graduate or transfer (OR = 1.469). The Hosmer and Lemeshow test suggested the model was a good fit, p = .587.

Though Barnhart (2011) found a negative associate between a student veteran's age and persistence in his analysis of a national dataset, I was surprised to find the negative effect of age. In general, findings in the community college persistence literature are inconsistent (Burrus et al., 2013). The influence of first-term cumulative GPA was not surprising and prompted an analysis of its relationship, as a dependent variable, with the remaining independent variables.

Multiple linear regression. Because first-term cumulative GPA is a continuous variable, I chose linear regression for the statistical analysis (Gravetter & Wallnau, 2013). I created dummy variables for gender, race, enrollment status, level of eligibility, and use of additional financial aid and recoded them in preparation for the analyses. The data were tested against the assumptions for multiple linear regression. No violations were found. The full regression model analysis identified Black, Non-Hispanic, Hispanic, Other, initial enrollment status, and age as statistically significant in predicting GPA when controlling for gender, level of eligibility, and use of additional financial aid. The results are displayed in Table 5.3.

Table 5.3

Summary of Multiple Linear Regression Analysis for 1st Term GPA (N = 585)

Variable	B	SE(B)	β	*t*	Sig. (*p*)
Age	.015	.006	.100	2.413	.016
Black, Non-Hispanic	-.699	.139	-.209	-5.020	.000
Hispanic	-.318	.096	-.138	-3.317	.001
Other	-.532	.170	-.129	-3.135	.002
Initial Enrollment Status	.195	.089	.090	2.182	.029

Note. $R^2 = .072$

The multiple regression model with the five predictors produced $R^2 = .072$, $F(8, 576) = 5.596$ $p = .000$. The findings suggest a statistically significant negative relationship between minority racial status and GPA, a statistically significant positive influence for full-time enrollment status, and a statistically significant positive effect for older student veterans on GPA.

Though race/ethnicity was not found to be a predictor of success, if was found to have a negative influence on GPA. Semer's (2015) multi-institutional research also revealed race (non-white) as a negative predictor of first-term cumulative GPA for military students and student veterans. In fact, it accounted for 34% of the total 44% variance in the final regression model (Semer, 2015). Dudella and Kim (2012) found a negative result, though relatively low numerically, in their comparative research between veterans and non-veterans at a four-year institution. They also found status of an older

student veteran to have a statistically significant positive effect (Durdella & Kim, 2012). It was interesting to find age, in this current study, to be positively associated with GPA, but negatively associated with success. Future research, with additional factors that are congruent with the model, is needed to better understand any indirect or compensatory effects.

Analysis of the Framework

This study applied an adapted Bean and Metzner (1985) conceptual model for nontraditional student attrition to explore predictors of success for Post-9/11 student veterans enrolled at a Texas community college. The original path model design postulated direct and indirect effects, as well as compensatory interactions, for four sets of variables on the dependent variable of "drop out." The model emphasized environmental variables (those external to the institution) over social integration for nontraditional students (Bean & Metzner, 1985). The original model can be found at Figure 2.1. For the adapted model (Figure 2.2), I included the variables that were available through institutional data and supported through the literature review. Unlike the original model, I broadened the outcome variable to be more representative of the community college sector.

Consistent with the Bean and Metzner model, this study found a direct association of age and college academic performance (GPA) on a student veteran's success at a community college. This was not too surprising, since research has confirmed the predictive nature of college grades to persistence (Adelman, 2006; Pascarella & Terenzini, 2005). For the race/ethnicity variable, Bean and Metzner (1985) theorized it

would indirectly impact "drop out" "through a strong negative influence on GPA" for non-White students (p. 498). This study suggests such an effect. Yet, the logistic regression model's weak effect size (Nagelkerke $R^2 = .037$) and the total explained variance of the linear regression model of only 7%, suggest future research should include additional variables from the original model in future research (e.g., academic variables, additional environmental variables, and psychological outcomes). The study's findings imply that the conceptual framework met the expectation for creating a foundation from which later research on student veterans' educational outcomes can expand.

Limitations

This study had four overarching limitations. First, it was limited to a single community college in Texas. Though purposeful in scope, the results cannot be generalized to other community colleges in the state or nationally. Second, while the population size was robust, the small number of "successful" student veterans did not permit the use of more in-depth statistical analyses. A path model analysis would allow for a more nuanced understanding of the causal direct and indirect relationships of the independent variables to the outcome of degree completion and would be more representative of the Bean and Metzner model.

Third, the study's model was overly reliant on individual background and defining characteristics for the probability of the student veteran to succeed with limited environmental factors and without inclusion of psychological outcomes or the influence of institutional characteristics, policies, or practice. I address the need for more variables

in the future research section. For institutional characteristics, I purposefully chose this college due its commitment to the Principles of Excellence and the 8 Keys to Veterans Success, as well as the presence of a VetSuccess office on campus. Future studies should include multiple community colleges with varying levels of institutional commitment to student veteran support in order to investigate how these interact with individual characteristics to influence student veterans' educational success.

Finally, the *Million Records Project* (2014) and the Department of Veteran Affairs (2015) have reported differences among the services in terms of degree level and graduation rates; however, prior branch of service was not included as an independent variable within the study's adapted model. My research request did include this variable; however, prior branch of service was not readily available within the institutional records. My only option for obtaining this information would have been through the required Freedom of Information Act (FOIA) request to the U.S. Department of Veterans Affairs. Such action was not feasible due to the time constraints for completing the study.

Significance of the Study

By exploring the factors that influence Post-9/11 student veterans' completion and transfer outcomes when enrolled at a community college, this study represents a specification in veteran population and institutional-type not seen in prior quantitative studies and plays a significant role in informing future policy, practice, and research. The results of this study expand the severely limited research on the educational outcomes of student veterans and set the stage for further expansion by researchers. While the findings of the study may raise concern by policymakers, it more importantly highlights

the need for additional data not currently available to researchers and for a consistent methodology in reporting student veteran outcome data. For practitioners at the community college level, this study begins to build a framework for reporting and analyzing variables associated with student veteran success that can assist in making data-driven decisions concerning support services. Thus, it is important for researchers to add more variables available at the local level, or add additional variables to the data collection process.

Implications for Policy and Practice

To improve the continued conversation about the educational progress and completion of student veterans improvements in data collection and reporting are critical. The current national data collection systems are inadequate in collecting unique points needed to fully understand this population's participation in postsecondary education and their outcomes. Today's data lack specificity in the population being measured (i.e. including all beneficiaries) and can lead to misinterpretations. The research literature echoes the need for better access to and accuracy of the national data on student veterans in higher education (Cate, 2014; GAO, 2013a; Molina & Morse, 2015; SOC, 2012). Improving that data will require student veteran information to be consolidated from across the Departments of Defense, Veterans Affairs, and Education data systems. Relying on voluntary submission of data by institutions does not fulfill the intention of the collaboration among these departments mandated by Executive Order No. 13607. Reliable, accurate data are crucial to answer policymakers' questions about the return on investment and continuation of this important multi-billion dollar federal program. The

recent partnership with the Student Veterans of America, the U.S. Department of Veterans Affairs, and the National Student Clearinghouse is a promising move toward a national methodology; however, access to the data is limited to the partnership. In this era of data based decision-making and transparency, more, accurate, and accessible data are necessary at the institutional and national levels to ensure continuance of the generous educational programs for veterans.

A survey of 239 higher education institutions, including 33 public, two-year colleges, found that while many had "dedicated personnel and resources" to support military students and student veterans, only 33 percent tracked retention or degree completion for student veterans (NASPA, 2013). This is not acceptable. The new reporting requirement of Public Law 114-315; Jeff Miller and Richard Blumenthal Veterans Health Care and Benefits Improvement Act is a welcome impetus for administrators to establish institutional policy mandating the uniform collection and tracking of Post-9/11 student veterans' educational progress and completion rates at their institutions. Differentiating student veterans from among "military-connected" students is essential, and for transparency, annual institutional reports should include the results. Such practices meet the federal requirements and help institutions to identify potential barriers to student veterans' success that could be cured by institutional improvement strategies. Without a consistent methodology of measuring student veterans' progress and outcomes, the effectiveness of current programs and the need for new resources cannot be sufficiently documented.

The low GPA for the student veterans in this current study seems to suggest a weakness in previous academic preparation. For community colleges in Texas, academic preparation, or college readiness, is measured through one of four entry tests. These tests are referred to collectively as the Texas Success Initiative (TSI) assessment. The original data I received from included whether or not the student veteran had taken the TSI exam. Subsequent enrollment data for some of the student veterans indicated a change in the status of this variable; however, I did not have information on whether or not the student veteran enrolled in a developmental course. Upon further research, I discovered that active duty and veterans are exempt from completing the TSI if they served at least three years prior to enrollment (THECB, 2012). Given that nearly 50% (47.9%) of the Fall 2014 cohort of first-time entering students in Texas community colleges were not college ready (THECB, 2016) and that public two-year institutions have reported academic stress as one of "the top three most pressing issues affecting veteran and military students' educational progress at their institution" (McBain, Kim, Cook, & Snead, 2012, p. 40), I recommend Texas community colleges begin to monitor student veterans' success rates in college-level math and English courses or patterns of student veterans self-selecting to enroll in developmental education. These data could inform the policy development decisions related to the TSI exemptions for military students and student veterans.

Finally, the findings of this study undergird the need for community colleges to ensure academic support services are available for student veterans. Implementation of an early academic alert system for GPAs that fall below 2.50 should mandate support personnel reach out to student veterans and offer assistance. This type of intervention

strategy allows for a proactive approach in identifying academically at-risk student veterans, addressing the academic barriers they may face, and getting them back on track with the tools needed for success.

Recommendations for Future Research

While qualitative studies have identified challenges military personnel commonly face when they leave active duty and enter a civilian academic setting as a student, there is a need for more quantitative research that examines, in detail, the variables related to their educational progress and outcomes, specifically Post-9/11 student veterans at community colleges. These recommendations are directed at community colleges, because that's where veterans are choosing to enroll at much higher percentages than other institutions (Radford, 2011). Future researchers should ensure clarity in the population being studied by not including other Post-9/11 beneficiaries, as they approach their higher educational paths differently (Molina & Morse, 2015), and not including various types of institutions. Combining these could lead to misinterpretations of the research.

Expand the Model's Variables and Outcomes

To build upon the framework of this study, it is necessary for future quantitative research to expand the environmental variables and include the academic variables and the psychological outcomes found in the Bean and Metzner (1985) model of nontraditional student attrition. Future researchers should review surveys used in recent studies that measured intent to persist and self-reported academic success by student veterans (Durdella & Kim, 2015; Mentzer, Black, & Spohn, 2014; O'Rourke, 2013;

Semer, 2015; Sitzes & Akroyd, 2016) and either revise these surveys for implementation or use them "as is" to explore the findings beyond the student veteran's intent to persist to completion or transfer. While academic attitudes and intentions have been linked to behavior (Bean & Eaton, 2001), I recommend matching the surveys to institutional data for GPA and outcome to eliminate self-bias in reporting. Doing so would provide a longitudinal view of the influence of these variables that has not yet been collected for student veterans.

Include Military Factors

Future research should include military variables, such as prior service branch, time-in-service, duty type (e.g. enlisted or officer), occupational specialty, and military credits transferred into the college or university as a separate set of variables. These align with the recommended standard variables for data collection, analysis, and reporting outlined by the Servicemembers Opportunity Colleges' Education Working Group (SOC, 2012). Recent descriptive reports have collected some of these variables. For example, the Department of Veterans Affairs found that between 2002 and 2013, veterans' graduation rates by type of prior military service were similar, ranging from 40 to 50%, except for the Air Force, whose veterans' graduation rate was 65% (VA, 2015). In addition, the *Million Record Report* detailed the highest degree earned, completion rates, and time-to-completion rates for the five services, but did explore the relationship of these variables to a student veteran's likelihood to succeed in higher education. The lack of inclusion of these variables in the research is not surprising, since the Department of Veteran Affairs is the only reliable source for the data.

To my knowledge, no empirical research to date has been conducted that includes prior duty type, time-in-service, or prior occupational specialty (e.g. MOS, NEC, or AFSC) as variables. Zoli, Maury, and Fay (2015) did find "that most servicemembers are not likely to pursue education programs and careers which are similar to their prior military jobs"; however, including the variable, identified at the career group level (not the specific job), could offer some insight on academic preparation through prior military education and training.

Through their affiliation with the Community College of the Air Force and partnerships with the American Council on Education (ACE) and civilian institutions, the services are invested in validating military personnel's earned and recommended college credits for the military training and experience they have completed. Qualitative studies have found military students and student veterans to be, at times, frustrated or confused about the acceptance or application of their military credits (Persky & Oliver, 2011; Alschuler & Yarab, 2016). While McBain, Kim, Cook, and Snead (2012) found a large number of the schools they surveyed recognized credit for military and occupational training, Lang and Powers (2013) found that only one-third of the military students in their study received credit for their military training.

Combined with age and gender, transfer credits and prior military experience have been shown to predict the completion of a degree in three years for 64% of student veterans in an on-line undergraduate program (McAllen, Downs, & Ascani, 2013). The association between the number of military credits transferred into an institution and the student veterans' outcome is worth further exploration. Such research could offer

additional insight into how institutional policies promote or hinder the academic momentum of student veterans.

Link Veteran-Specific Services and Programs to Completion

Authors of qualitative studies emphasize the need for higher education institutions to establish veteran-specific services and programs (e.g. veteran centers, faculty training, student veteran organizations, veteran-specific orientation, counseling, etc.) to support military members and veterans in addressing and overcoming challenges they face while moving into and through the academic environment (Falkey, 2014; DiRamio, Ackerman, & Garza Mitchell, 2008; Wheeler, 2012; Zinger & Cohen, 2010). The federal government has also encouraged colleges and universities to incorporate "military friendly" practices (Principles of Excellence; 8 Keys; Toolkit) and created their own programs to foster persistence and completion among student veterans (e.g., VetSuccess, Veterans Upward Bound). It is clear that higher education institutions have responded by increasing the availability of services and programs (McBain, Young, Cook, & Snead, 2012; Queen & Lewis, 2014). However, the rate at which student veterans use these services and to what extent the services and programs influence the educational success of student veterans is not clear (Molina & Morse, 2015). Future quantitative research should focus on these services and their impact, so that those with positive empirical evidence can be replicated to scale.

Explore Employment Outcomes

From origination, the intention of the GI Bill has been as "a readjustment benefit to help veterans join the civilian workforce" (Dortch, 2014, p. 31). While figures vary on

the number of veterans utilizing their educational benefits, Post-9/11 veterans use their VA benefits at a higher rate than other veteran cohorts (NCVAS, 2015), and career and job opportunities have been identified by servicemembers as primary motivations for pursuing a training or education program (Zoli, Maury, & Fay, 2015). How well these workforce expectations have been realized through the veteran's use of their Post-9/11 GI Bill benefits should be considered for exploration in future research.

Concluding Thoughts

Student veterans may only represent 4% of all undergraduates in U.S. community colleges (American Association of Community Colleges [AACC], 2016), but they represent a substantial federal investment (GAO, 2013b, 2015). The recent federal calls for accountability have intensified the focus on this uniquely understudied group of students within the nontraditional higher education population. Despite the national focus and increased funding for student veterans' education and training, there is surprisingly little quantitative studies on the educational progress and attainment rates of student veterans, especially at the state and institutional levels. This study added to the research literature by applying an adapted Bean and Metzner (1985) nontraditional student attrition model to understand the factors that influence student veterans' success at a Texas community college. The findings of this study should serve as a foundation for future quantitative research. Indeed, there is much more to uncover about this population's path to educational success.

Summary

This chapter began with a description of the gap in research on the educational outcomes of student veterans at community colleges and the purpose of this study. It continued with a summary of the study, which included the research questions and hypotheses, and a descriptive of the methodological approach. A discussion of the results, framed by the research literature followed. An analysis of the framework, the limitations of the study, and the significance of the study were also included. Finally, recommendations for policy, practice, and future research were offered, as were concluding thoughts about the study's findings.

Appendix

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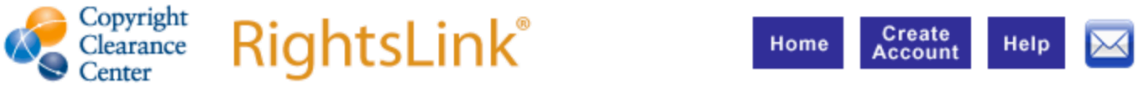

Title: A Conceptual Model of Nontraditional Undergraduate Student Attrition

Author: John P. Bean, Barbara S. Metzner

Publication: REVIEW OF EDUCATIONAL RESEARCH

Publisher: SAGE Publications

Date: 12/01/1985

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